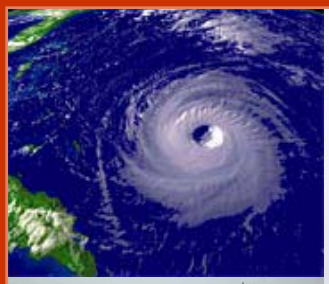










An Assessment: Virginia's Response to Hurricane Isabel

Submitted to

The Honorable Mark R. Warner Governor of Virginia

December 2003

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Presented by the

HURRICANE ISABEL
ASSESSMENT TEAM

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ACKNOWLEDGMENTS

The Team wishes to acknowledge the unparalleled dedication of the personnel of the Commonwealth of Virginia; of county and municipal government personnel; and of their private sector and nonprofit partners, who collectively worked long days and nights to lessen suffering and restore order. The Team's interviews across the impacted portions of the Commonwealth demonstrated the high degree of care and concern that government showed for its citizens. Public servants and volunteers did more than most individuals will ever realize. The positive comments pointed out in this report reflect upon the commitment and contributions of the fine people throughout the Commonwealth of Virginia. The problems that were uncovered and the failures that occurred reflect upon systems and management, not upon disaster responders.

Special thanks is extended to individuals who contributed to this study by helping with logistics for meetings, reaching local officials, reviewing the questionnaire, and sending background information for the research.

The Team appreciates the cooperation of these individuals:

Mr. Michel Amyx, Executive Director, Virginia Municipal League
Mr. G. John Avoli, Executive Director, Frontier Culture Museum
Ms. Linda Butterfield, Director of Meetings and Events, Virginia Association of Counties
Mr. James Campbell, Executive Director, Virginia Association of Counties
Ms. Janet Clements, Chief Deputy State Coordinator, Virginia Department of Emergency Management
Ms. Emma Harrison, Fredericksburg Public Library
Mr. Ronald Keys, Director of Emergency Services, City of Norfolk

EXECUTIVE SUMMARY

Background

Hurricane Isabel landed in Virginia on September 18, 2003, causing extensive damage from wind and rain, and leaving many communities without electricity for a week or more. This category one hurricane left an impact closer to that of a category two hurricane because pre-existing conditions -- a period of drought followed by a period of record-breaking precipitation -- made trees more vulnerable to Isabel's winds. The significant tree damage was responsible for cascading effects that taxed disaster response systems in both state and local government.

Hurricane Isabel directly affected 99 counties, cities, and towns in Virginia. The Tidewater area suffered the heaviest damage from rain, storm surge, and wind. In communities north and west of Tidewater, hurricane force winds caused most of the problems. Statistics show how severely the Commonwealth was affected:

- 33 deaths were attributed to Hurricane Isabel
- $1.6 billion in property damage resulted
- Over 1,000 homes and almost 800 businesses were destroyed
- Isabel damaged over 9,000 homes and 1,400 businesses
- 1.8 million electrical customers were without power, some for many days
- 231 advisories to boil water had to be issued; but with no power, many citizens could not boil water anyway
- 50% of Virginia's population was without water due to power failures
- 660,000 dump trucks worth of debris

In the days immediately following the storm, emergency personnel devoted an extraordinary effort toward recovery. The tasks before them were on a scale seldom experienced before in Virginia. Dedicated state and local government personnel, volunteers from nonprofit agencies, and restoration crews from the electric companies, logged thousands of hours trying to restore normalcy. Sometimes, those efforts were hampered by systems that could not keep pace with the demand, and by the lack of adequate pre-planning and management.

Governor Mark Warner appointed a Hurricane Isabel Assessment Team to help the Commonwealth and local governments identify the problems that occurred in responding to Hurricane Isabel. Mr. W. Robert Herbert, former Roanoke City Manager, served as Chairman, with team members, Ms. Claire A. Collins, Bath County Administrator, and Mr. William B. Rowland, Jr., former Deputy Director of Planning and Budget for the Commonwealth. The team was asked to research and report on how government handled the hurricane, what lessons could be learned, and how problems could be corrected so that emergency preparedness and response could be improved.

System Planning Corporation and its TriData division were chosen to assist the team in collecting information, analyzing the findings, and preparing a report. Mr. Charles Cragin, Senior Vice President, and Ms. Hollis Stambaugh, Director of the Center for Public Protection, managed the work.

Research Methodology

The Hurricane Isabel Assessment Team (Team) worked for seven weeks on a 10-step process that culminated in the final report, *An Assessment: Virginia's Response to Hurricane Isabel*. The Team's goal was to reach as many jurisdictions as possible among the 99 affected by the hurricane, and to meet with Commonwealth staff and officials to understand how key departments and agencies addressed preparedness, response, and recovery.

The Team sought involvement from the Virginia Municipal League (VML) and from the Virginia Association of Counties (VACo) to help distribute news releases about the project and encourage local government officials to participate. Executive Director, Mr. James Campbell from VACo, and VML's Executive Director, Mr. Michael Amyx assisted the Team.

The first task was to prepare a comprehensive questionnaire and mail it to the Virginia cities, counties, and towns that Hurricane Isabel affected. The questionnaire was reviewed internally and sent out to six peer reviewers from state and local government for input into the final document. When it was completed, the 6-page questionnaire included 56 questions under eight main headings, as follows:

- Disaster Training and Experience
- Preparing for Isabel
- Sheltering
- Communications
- Coordination
- Damage Assessment and Recovery
- Public Information
- Additional Comments

The Team mailed the questionnaire to 128 individuals at both the state and local level of government, 76 of who replied. This was a 60 percent rate-of-return, and an excellent response for a mail-out survey, especially given the fact that respondents were asked to complete and return it in a matter of a couple days. Staff developed a special database to record the answers, and this was used to create summaries and calculate statistics from the data.

In the cover letter accompanying the questionnaire, the Team invited government leaders and staff to be interviewed, and to discuss in person how the hurricane affected them and how

they responded. Interview Week ran from November 3 through November 10 and included Richmond, Norfolk, Fredericksburg, and the site of the annual VACo conference in Hot Springs.

Sixty-two individuals scheduled interviews. During these meetings the Team learned more about the consequences of the hurricane and the problems that state agencies and local governments faced as they struggled to meet the needs of citizens and restore order.

In addition to collecting information from the survey questionnaire and field interviews, the research team also read through a substantial amount of press clippings and the daily situation reports that were posted by the Virginia Department of Emergency Management (VDEM). The research team used these to compare information and capture additional details on the response to Hurricane Isabel.

The Team's research had some limitations, however. The Team did not meet with anyone from the Federal Emergency Management Agency (FEMA), nor did it talk to anyone from the electric companies, the American Red Cross, or other private organizations. The timeframe for accomplishing the Governor's assignment limited the Team's range in researching sources for response and recovery information. The Team also was aware that a separate study of the electric companies was underway and that several critical state agencies that were involved in the response were conducting their own internal reviews. Finally, though every effort was made to obtain feedback from each of the local governments affected, the Team did not receive participation from all of them. It is possible that some other issues might have come to light from those communities had they chosen to be part of the review.

Primary Concerns Voiced by State and Local Officials

There were many stories about how difficult it was to handle the consequences wrought by the storm. The sheer magnitude of the impact that evolved from tree loss and flooding became overwhelming in many areas. The federal government, through FEMA, sent national disaster reservists to Richmond and into some of the counties. Water, ice, and generators were in high demand and short supply. Roads were washed out or blocked by fallen trees and downed power lines made life miserable in many locations.

Some aspects of response and recovery went reasonably well. With the Governor's early declaration of disaster, low-lying communities began evacuating residents so that by the time Isabel arrived in the state, most of the Tidewater population had left to stay with friends or relatives, or moved into shelters. Nonprofit organizations prepared and served hundreds of thousands of meals. Power crews worked around the clock to repair downed lines, starting with the highest priorities, e.g. hospitals, fire and rescue stations, public works facilities, 911 centers, and so forth. State Police and the Virginia Department of Transportation pre-positioned personnel and equipment in the areas they expected to be hardest hit. Disaster reservists arrived by the dozens to augment staff in Richmond.

Despite best efforts, numerous problems arose, some of which were significant. The most serious of these, and the ones most often mentioned, are as follows:

1. **Emergency Planning and Preparedness needs to be improved**. The main issues discussed pertained to training, conducting a comprehensive update and review of the Commonwealth's emergency operations plan, a vastly improved communications strategy for state government to local government communications, and re-organization of the state Emergency Operations Center to include regional liaisons.
2. **Local preparedness to accommodate 72-hours of self-sufficiency is far from uniform.** Primary among the topics under this heading were concerns that some local governments sought help before exhausting their own resources, some local staff did not know about established procedures for requesting resources, a few local shelters and other facilities were not equipped with back-up generators or water, and various communities did not have adequate disaster plans or training because they had not taken advantage of available training.
3. **The Commonwealth's system for handling resource requests failed**. Not only was the state EOC inundated with requests, but it did not have a basic system in place that could adequately and efficiently track requests and progress on providing the resources that local governments needed. From identifying suppliers to distributing resources, the state should have been better prepared and had more individuals trained in proper procedures. Better outreach before the hurricane arrived would have helped ensure that proper forms and procedures were in place.
4. **Without power, local governments faced difficulties communicating with the public.** Television, emails, website news, faxes, and phones all were affected by power outages and caused communications problems. Radio became the single most important vehicle for emergency notifications, yet obtaining access to airtime was difficult. Participants applauded local government operated radio stations where news could be channeled and broadcast as often as necessary.
5. **Volunteers and federal disaster employees were not organized.** Numerous participants expressed concern that the situation in the state EOC was chaotic and that FEMA's personnel traveled out to the local communities en masse demanding information but providing little in return. Cramped conditions at the state EOC magnified the problems of organization and management.
6. **Citizens with special medical or accessibility needs encountered problems at shelters.** Many shelters do not have accommodations for evacuees who arrive needing medical care or having accessibility problems. People with allergies and babies needed special food and soy milk. More shelter workers who speak Spanish was a need that was mentioned.
7. **The public's expectations of government during disasters can be unrealistic.** Just as local governments need to become more capable of managing on their own for 72 hours, citizens need to be responsible for making their own preparations during events where there is advance notice. Individuals should stock up on water, transistor radios, medicine, batteries, canned food, blankets, and flashlights so that if an emergency occurs they can take care of critical needs for a brief period of time. There was significant discussion over the real importance of ice and whether that should be an expected commodity for government to supply.

Recommendations

Following are the Team's main recommendations, based on careful analysis of all the information collected.

1. Key Commonwealth disaster response agencies should review the Emergency Operations Plan and annexes and update them based on the lessons learned from major incidents over the last several years, including considerations for terrorism preparedness.

2. Local emergency management officials need to ensure that they have adequate disaster response and recovery plans, including a list of local resource providers with pre-negotiated emergency contracts.

3. Education must occur on all levels to ensure that assistance request procedures are understood before an event occurs.

4. Local jurisdictions that do not currently have the forms and procedures necessary to request essential resources beyond that which local jurisdictions can supply on their own, should ensure that they are cognizant of proper procedures for future emergencies, and that they have sample forms in stock.

5. VDEM has identified many problems in its own after-action assessment; however, VDEM should comprehensively examine the entire system to identify and implement substantive changes.

6. The overall data management system for the EOC needs to grow beyond a basic database to a more sophisticated and integrated consequence management software suite that ties into the Virginia Department of Transportation, the Virginia State Police, the Department of Health and Human Resources, and utility companies. It should comprise redundant communications and power back up.

7. VDEM should change its restrictive protocol for local governments to request resources so that requests for resources during the initial stages of the disaster can be submitted on-line, by fax, by telephone, or by radio, depending on the best available communications. Quick and effective resource replacement for local governments should be a high priority for VDEM's planning.

8. The Commonwealth should establish emergency management standards and minimum competency levels for key state and local elected and appointed officials, as well as for EOC staff. The standards and competency levels should form the basis for training courses, and should cover the skills and knowledge needed to prepare for all hazards.

9. VDEM should ensure that all personnel who are assigned as disaster reservists are adequately trained for their respective jobs, and that all reservists have had training on Virginia's emergency operations plan as well as on basic information about the jurisdictions they are assigned to help (in most cases, this is where they are located).

10. The Commonwealth should adopt a financial incentive program that ties preparedness and training to the Commonwealth's (non-federal) share of disaster recovery reimbursement to local governments or to future grant awards. Emergency preparedness accredited local governments (those which can document having achieved the requisite level of emergency management preparedness) would qualify for special benefits.

11. VDEM should focus its disaster assistance to local governments by using regional or district action officers and assistant officers to maintain liaison with local EOCs. The action officers should be physically located in the EOC as the primary points of contact for all local government requests and communications during disasters. Status briefings should occur whenever shifts change, so that any outstanding contacts or requests can be carried forward and resolved.

12. VDEM (and local disaster agencies, where applicable) should establish and enforce a work/rest policy that applies to all emergency personnel while they are engaged in disaster-related activities. Typical work/rest policies during emergencies recognize 12 hours as the maximum time working, followed by rest outside the immediate work area. Guidelines should be widely disseminated and supervisors should be expected to enforce the guidelines.

13. Establish a staffing plan to better organize all state disaster resource personnel assigned to the state EOC and those that are likely to arrive through FEMA. Additional personnel from FEMA need to be identified prior to their arrival and VDEM should inform FEMA about what types of expertise are needed and the number of FEMA employees to be assigned. FEMA should ensure that the individuals they send possess the requisite credentials and experience to serve in the capacity directed by VDEM. No FEMA personnel should be dispatched to the field unless authorized by VDEM, with clear missions. VDEM should communicate with local authorities in advance if disaster reservists are expected to be sent so the locality can confirm that they are needed, and make accommodations for housing and food, if necessary.

14. The Commonwealth should establish a disaster communications committee for the purpose of identifying which local public and private radio stations were used successfully for public information during the hurricane. The work group should prepare a brief report for local governments on how local radio stations (such as private, NPR affiliate, university, and state stations) helped communicate emergency information. The report should provide guidelines

on how local governments can obtain better control of emergency public information. The work group should examine policies governing emergency broadcasts on all radio stations with stations operating in Virginia.

15. The Commonwealth should develop a public information campaign about the role of the individual, and of local and state government before, during, and after emergencies. The information should be available for local distribution.

16. State and local EOCs should ensure that they have adequate space, back-up power, and equipment to continue operations during emergencies. State and local officials should verify that they have Continuity of Operations Plan for all critical facilities that supply emergency and disaster-related services, and for communications. All facilities providing care to special needs populations must confirm the adequacy of their emergency power and of their ability to maintain self-sufficiency in communications, water, food, and pharmaceutical supplies for emergencies.

17. VDEM should develop an improved state and local communications system for the two-way transmission of information during emergencies. The system should set clear guidelines for conference calls and for the transmission of requests for assistance. The system should be organized by region.

18. The Governor should facilitate the development of a joint work group including the State Corporation Commission, key executive branch agencies, and senior managers of the state's electric companies, and should seek cooperation from the state legislature, to improve coordination and information sharing during power outages.

19. VDEM should prepare a debris management plan and offer guidance and training to local governments in generating policies and procedures to quickly and efficiently clear and remove debris after disasters.

Conclusion

Governor Warner and the Commonwealth's departments and agencies should be applauded for commissioning this study. The Team found abundant evidence that government personnel at both the state and local level demonstrated enormous concern about the public's welfare during the period of recovery after Hurricane Isabel. These public servants and volunteers from the private sector and nonprofit agencies dedicated more hours of effort serving the public than residents will ever realize. The Team appreciates having had the opportunity to contribute to the Commonwealth's future preparedness for disasters through the recommendations made in this report. The Team hopes that these recommendations will form the basis for strategic and systematic improvements in the Commonwealth's and in local governments' ability to handle future events and to coordinate resources so that needs are met as efficiently as possible and the impact of major events can be mitigated.

INTRODUCTION

Shortly after one of the most devastating, widespread natural disasters hit Virginia, Governor Mark Warner appointed a Hurricane Isabel Assessment Team (Team) to help the Commonwealth and local governments identify the problems that occurred in responding to Hurricane Isabel. He asked the former Roanoke City Manager, Mr. W. Robert Herbert to act as Chairman. Governor Warner also appointed Bath County Administrator, Ms. Claire A. Collins, and former Deputy Director of Planning and Budget for the Commonwealth, Mr. William B. Rowland, Jr. The Governor directed the Team to research and report on how government handled the hurricane, what lessons could be learned, and how problems could be corrected so that all concerned could make improvements in handling future disasters.

System Planning Corporation, and its TriData division, was chosen to assist the Team in its independent analysis of challenges (and successes) stemming from Hurricane Isabel. Results of the Team's research are presented in this report to the Governor.

The report is divided into three parts:

Part A: Insight from Interviews with State and Local Officials
Part B: Results from the Questionnaire
Part C: Findings and Recommendations

The Team's objective assessment of Virginia's response to Hurricane Isabel is at times hard-hitting. The Team's view is that much is at stake during emergency operations, and people's lives, health, and property are affected by how well a government prepares for emergencies. The lessons that were learned from Hurricane Isabel revealed aspects of emergency preparedness that need to be taken seriously and corrected.

Even the best plans and preparedness, however, cannot cover all the unexpected and unforeseen conditions that arise whenever nature strikes a major blow. Neither is it possible to predict exactly how terrorist attacks – and Virginia has experienced two such episodes in as many years – could again threaten the Commonwealth's citizens. The impact of all types of disasters is best mitigated by excellent planning, and by disaster response systems that are supported by up-to-date technology, training, and exercises.

Research Methodology

Hurricane Isabel directly affected 99 counties, cities, and towns in Virginia. The Tidewater area suffered the heaviest damage from rain, storm surge, and wind. Hurricane force winds caused most of the problems in the communities north and west of Tidewater. Since each community was likely to have experienced various types and degrees of problems, the Team needed to reach as many jurisdictions as possible to obtain a complete picture of events. The Team also needed input from state staff and officials to understand how key departments and agencies addressed preparedness, response, and recovery. The Team wanted to collect specific information on such key topics as preparations for the storm, shelters, communications, resource requirements and response, disaster management and coordination, damage assessment, and recovery.

Over a six-week period, the Team implemented a research process that covered the majority of Virginia's counties, cities, and towns. The Team also met with top state officials in Richmond and read a plethora of situation reports and news articles on the hurricane. The following ten steps describe how the Team approached its mission.

Step 1—The work began by reading and summarizing the daily situation reports posted by the Virginia Department of Emergency Management (VDEM) on its website. The reports provided a glimpse of the day-to-day developments in response and recovery, as well as quantitative information about hurricane-related deaths, power outages, evacuation, sheltering, and meals served. Regular conference calls between the state and local governments were documented along with disaster declarations and local conditions.

Step 2—To capture the media's reports on local situation, the Team read and summarized a significant volume of press clippings from around the state (see Appendix A.) The newspaper accounts provided a unique picture as reporters wrote detailed descriptions of Isabel's impact and how the hurricane was affecting citizens. Concerns about power outages, critical supplies, and damage dominated the print media in the first days after the storm.

Step 3—Based on the detailed, background information the Team developed a six-page questionnaire on the response to Hurricane Isabel. Draft copies were sent out for peer review, netting valuable comments, amendments and additions. These individuals graciously critiqued the questionnaire and returned their comments within 24 hours:

- Mr. George Wallace, City Manager, City of Hampton
- Mr. Lane Ramsey, County Administrator, Chesterfield County
- Ms. Sandy Wanner, County Administrator, James City County
- Mr. Steven M. Mondul, State Director, Security and Emergency Management, Virginia Department of Transportation
- Ms. Janet Clements, Chief Deputy State Coordinator, Virginia Department of Emergency Management
- Colonel W. Steve Flaherty, Superintendent, Virginia State Police

A copy of the questionnaire is included as Appendix B.

Step 4—The Team scheduled meetings across the impact area as another means of collecting feedback. The Team chose Richmond, Norfolk, Fredericksburg, and Hot Springs as the locations best situated to the majority of local governments in the declared disaster area. Hot Springs was chosen because the Team wanted to take advantage of the annual scheduled meeting of the Virginia Association of Counties. The conference was a good opportunity to reach more county managers and elected local government officials.

Step 5—The Team contacted Mr. Michael Amyx, Executive Director of the Virginia Municipal League (VML) and Mr. James Campbell, Executive Director of the Virginia

Association of Counties (VACo). Both individuals were extremely cooperative and immediately spread news of the study. Each Executive Director provided their membership lists and labels, which were used to address and mail the questionnaire packages. VACo and VML helped in other ways as well. They sent reminder messages to their constituencies, and in some cases made phone calls. Executive Director Campbell handled the requests for interviews at the VACo conference site, reserved rooms at the facility for interviews, and encouraged more county representatives to meet with the Team. VACo and VML were solid partners in this project.

Step 6—Mailed the questionnaire, instruction sheet, and cover letter to 128 individuals city, county and town managers, 76 of whom responded. A complete list of respondents is provided in Appendix C. This 60 percent rate-of-return was an excellent response for a mail survey, especially since it was a long questionnaire with numerous open-ended questions and an immediate return deadline. The response was indicative of how important the subject was to local governments and to state agencies. Despite the press of business and on-going clean up and recovery tasks, local officials took time to register their opinions about how government responded to Isabel. Respondents faxed their completed questionnaires to SPC's offices where they were catalogued and prepared for the database.

Step 7—While the Team was in the field meeting with officials, SPC support staff built a database for the questionnaire responses, entered the information, conducted queries, and ran summary reports.

Step 8—The Team advertised opportunities for state and local government officials to meet in person if they were interested in directly airing concerns or describing events. The cover letter accompanying the questionnaire notified officials of the interview sites and explained how to schedule an interview session. VACo and VML also helped to disseminate this information through various communications with their members. Sixty-one state and local officials answered the invitation and met with Team members in Richmond, Norfolk, Fredericksburg, and at the VACo conference in Hot Springs. A few individuals who could not meet in person agreed to interviews by telephone. They are included in the count. The state agencies and local governments surveyed and interviewed are included as Appendix D.

Step 9—SPC compiled and analyzed the answers to the questionnaire and field interviews, and prepared the draft report. Following review and comment, the final report was produced.

Step 10—The Team presented the report to the Honorable Governor Mark R. Warner in early December, 2003.

Limitations of Research

There were several limitations to the Team's research and findings. The findings contained in this report are based upon the information that was collected from the Virginia Department of Emergency Management (VDEM) situation reports, the news media, testimony at congressional hearings, and input from the state and local government representatives who answered the questionnaire or talked to the Team during interview week. The Team did not meet with anyone from the Federal Emergency Management Agency (FEMA) (now, Planning,

Response and Recovery under the Department of Homeland Security), nor did the Team interview or make direct requests for information from FEMA. We did not interview anyone from the electric companies or other private or not-profit sector entities (e.g., Red Cross, Civil Air patrol). Though it would have been valuable to gather information from these sources, our focus was on state and local government response to the threat and the eventual impact of Hurricane Isabel in Virginia. The time frame provided for accomplishing the mission limited the Team's range in researching how all parties involved in response and recovery handled their mission. Moreover, reports are underway regarding the electric companies and their preparedness and restoration of power.

Another point is that not all local governments that were affected by Isabel responded to the questionnaire or asked for interviews. While participation and response were extremely good, and most of the important issues were captured, it is possible that other issues might have been revealed from jurisdictions which chose not to respond.

PART A. INSIGHT FROM INTERVIEWS WITH STATE AND LOCAL OFFICIALS

Actions Taken in Preparation for Isabel

State Agencies and FEMA

On September 15, 2003, three days in advance of Isabel's landfall September 18, Governor Warner declared a state of emergency. Virtually all individuals who were interviewed praised the Governor for his action that paved the way for critical steps to be taken before the worst of the storm affected Virginia. Many citizens elected to leave low-lying areas and move inland early, thus reducing an untimely mass exodus from the Tidewater area, and possibly preventing a number of storm-related deaths. The Secretary of Public Safety routed all plans through the Governor's Office. The Governor received high marks for paying attention to expert advice.

The Department of Health updated contact lists, recorded contact numbers for key employees, and investigated securing cell-on-wheel (COW) towers. The emergency preparedness and response group for this department is relatively new (August 2002), and was preparing for its first full-scale exercise when Hurricane Isabel hit. The Department of Health's preparations for such an emergency were already underway.

Approximately one week before the storm made landfall, the Bureau of Insurance of the State Corporation Commission began tracking the path of Hurricane Isabel. The Bureau anticipated the areas which might be affected so it could be in a better position to respond to citizen needs. The Bureau was proactive in reaching out to the public before the storm arrived. Bureau staff released a series of public service announcements prior to September 15, and immediately following the hurricane. Citizens were directed to visit the Bureau's website, check insurance policies, and get necessary documentation together in one place. Bureau staff also assembled disaster teams to help citizens understand the limits of their insurance coverage, answer questions, and provide forms for filing claims for damage and debris removal. Information kits of written information were created in advance for distribution at disaster assistance centers. The Bureau is now exploring a continuing education effort and training additional staff to expand the number of qualified staff to assist in future emergencies.

The state Emergency Operations Center (EOC) pre-positioned 150 Virginia National Guard personnel throughout the state to assist local governments and to transport goods, such as water, ice, and meals. State disaster reservists were called in and given assignments.

Virginia State Police (VSP) planned for the hurricane as they do any other disaster. All leave was cancelled and personnel were placed on 12-hour shifts. VSP personnel and other VSP assets were deployed to the Tidewater area where the storm was predicted to make landfall. Approximately 75 troopers were sent to Newport News – with 15 to 20 traveling on to the eastern shore area. The VSP plan was to help local authorities evacuate low-lying areas prone to flooding. The VSP also pre-deployed other special units and assets, including two swift water rescue teams (later used in several rescues), a number of 4-wheel drive units, and a mobile

communications unit. VSP considered sending additional troopers to Tidewater, but the state EOC recommended waiting until there was more information about the track of the storm.

The Virginia Department of Transportation (VDOT) prepared their "tiger" teams. Each VDOT district has teams made up of specially trained engineers, maintenance personnel, and equipment capable of handling a wide variety of tasks The tiger teams that were deployed through the VDOT EOC for Hurricane Isabel were organized into four areas:

- Debris removal
- Road repair
- Signal repair
- Bridge repair

The first tiger teams deployed were debris removal units that assisted in reopening priority highways and secondary roads. Fortunately, VDOT had conducted four training exercises in 2002 and two during 2003, one of which was a hurricane scenario.

The Federal Emergency Management Agency sent an advance team to Richmond followed by a National Emergency Response Team (ERT-N) composed of several hundred augmentees from all over the country. They set up operations on the campus of the Virginia State Police headquarters near the building that housed the state EOC.

Local Governments

Many local governments did an excellent job of preparing for the storm; a few examples are described next.

Newport News identified all special needs individuals in the community and placed their names and addresses in the computer-aided dispatch at the 911 center. Through GIS, dispatchers also knew the location of the address on a map so emergency responders could quickly locate and assist people with particular needs.

In the City of Norfolk planning and response procedures were in place at least 72 hours prior to the hurricane's making landfall. The city broadcast a series of public safety announcements stressing that residents should be prepared to be self sufficient for at least 72 hours. Once the Governor declared a state of emergency, residents began to evacuate the city. The city relocated personnel and emergency equipment to safe locations. It opened the first shelters on September 17, and staffed them with city workers, 1,600 of whom were trained in shelter operations. The teams also were prepared to move inland to host shelters as liaisons from the city. Arrangements with city parking garages were made to allow residents of low-lying areas to garage approximately 8,000 vehicles. This proactive measure prevented damage to property.

Norfolk was well prepared in other ways, too. Emergency managers met with officials from local medical facilities to discuss their emergency operations plans and to determine their needs. Local hospitals contracted with medical facilities in Williamsburg, Petersburg, and Richmond to accept Norfolk patients if they had to be evacuated. If any special needs patients

from local medical facilities arrived at a city shelter, the city's health department was assigned to manage the situation.

Norfolk's EOC staff and the city's health department contacted the local power companies to ascertain how many special needs persons resided in the Norfolk area. It was determined that 14,000 home patients with special needs lived in the immediate area. The power company contacted each of them to inform them what to do if they were to lose power. The power company also agreed to immediately contact the city's EOC if power were lost at those addresses. The city's EOC would then make special arrangements to either provide an alternative power supply or move the individual to a facility capable of addressing their care needs. Every year, Norfolk's emergency management personnel meet with nursing homes to pre-plan and ensure that the nursing homes have transportation arrangements in place and are paired with another facility to which they can transport their patients.

Norfolk also secured and pre-deployed 60 pumps and generators at critical locations throughout the city to maintain water and sewage. In so doing, Norfolk was the only city in the Tidewater area that did not lose water or sewage treatment capabilities.

Fauquier County's fire department and emergency management staff worked on an initial damage assessment form before Isabel, and they used this form to document damage. The form could be emailed and faxed to the EOC to communicate assessments. County staff sent disaster information home with all school students, notifying families about the public information hotline and precautions they could take.

Manassas has its own power system, and more than 50 percent of the power lines are underground, making the city less vulnerable to power loss. The city's horticulture department is active in tree trimming which saved a lot of post-storm work and helped avoid overwhelming debris removal problems.

Response to Isabel's Arrival

Evacuation and Shelters

Emergency shelters are handled by local social services or other local organizations. Partners in sheltering efforts include the American Red Cross and local health departments. Many jurisdictions that set up shelters had to contend with special needs. Elderly and infirm individuals needed health care services on site, and there were jurisdictions that did not have the resources to handle these requirements. Concerns included liability issues, medical equipment, legal obligations, and on-site medical personnel, to name a few. A significant number of people with real medical needs showed up at the locally operated shelters. According to the State Secretary of Health and Social Services, there were instances following the hurricane in which nursing home patients were moved to a local shelter that was not equipped or staffed to provide the proper level of care. Henrico County assigned EMS personnel to each shelter to provide medical care; a county health department nurse was available at Madison County's shelter.

Other special shelters requirements included: accessibility for wheelchairs, caregivers for mentally and learning-challenged individuals, and bathing facilities. What to do about getting homeless people into shelters is a local challenge.

All local jurisdictions banned pets from their shelters. This caused problems for some citizens who needed to be sheltered but would not enter a shelter without their pet(s). A few communities made separate provisions with animal shelters to protect house pets.

Several local government representatives expressed a need for Spanish-speaking shelter workers because many of the people who sought shelter spoke only Spanish. Some hospitals and shelters were concerned about having adequate oxygen for arriving patients. Citizens seeking shelter harbored unrealistic expectations that the shelter would take care of their immediate medical needs.

It appears as though food was not a major problem at the shelters since that topic was seldom mentioned. The state has reported that 1.4 million meals were served by non-profit organizations, and there were many more served that did not get counted in the official tally. Though overall there seemed to be an adequate amount of food and means for providing it, people with food allergies frequently could not be accommodated. The Secretary of Health and Human Resources suggested that, in the future, shelters should carry some comestibles for people who are allergic to such common products as dairy or wheat. Formula for babies, especially soymilk, was in short supply.

During disaster operations it is important to make sure that disaster workers and their families are taken care of too. Some jurisdictions set up separate emergency shelters for their employees and their families. Having this option available was a huge morale booster, even if only a few family members took advantage of the offer.

Tracking and Providing Requested Resources

There is no question that Hurricane Isabel left in its wake an enormous amount of problems and human needs that governments struggled to address. Despite good intentions and enormous dedication to duty, the state was unable to adequately document requests, procure resources, communicate with both suppliers and requesters, and manage the operation. Many resources did eventually find their way to communities, but often it was too little, too late. The Virginia Department of Emergency Management (VDEM) is conducting its own after-action report and examining solutions to the problems identified in this report.

The vast majority of jurisdictions that were represented in the Team's field interviews voiced frustration in dealing with VDEM and with FEMA. One of the primary problems was how local government requests were received and documented. VDEM and FEMA both correctly point out that there is a system for logging and filling requests that originate at the local government level. However, many communities:

- Did not know about the special forms they were supposed to complete.
- Did not have copies of special forms in advance.
- Could not receive or transmit the form once the power was lost.
- Were able to follow proper procedures, but VDEM was unable to track the requests or report on progress.

The City of Hampton kept a record of their requests and how they communicated these (see Appendix E). Like most local emergency management agencies, Hampton participated in the daily conference calls by VDEM. The City of Hampton assumed that verbally requesting water, ice, generators, and fuel was a reasonable means of communicating what was needed. Unfortunately, it was not until later that the city learned that this method did not suffice as the prescribed method for making requests.

Logistically, there were significant problems getting requests filled. The problems centered on the following:

- Confusion over whether requests had been received by VDEM, and whether VDEM was taking action.
- Inconsistent and contradictory information from VDEM about the status of filling requests, the timeframe for delivery and the quantities that were enroute, and the method of local distribution.
- Inflexible rules on what was considered a formal, or legitimate request. Eventually it became clear that unless a request was documented on a situation report that was sent electronically, the request was not in the system. Even though a large percentage of local government EOCs could not communicate via computer, the state EOC and FEMA typically did not accept requests that arrived by phone, fax, or conference calls.
- Confusion over who was responsible for setting up the distribution centers and what resources had to be there to effect the final transfer of supplies and equipment.
- The hours of time wasted in changing the pick-up and distribution schedule and communicating the changes to volunteers. Often a second local government crew had to be deployed after the first one had been dispatched to another location.

Another problem that emerged was that when jurisdictions asked for generators, they did not always check the power capacity that was needed. The fire chief for Henrico County and the emergency management coordinator for the City of Norfolk both recommended that jurisdictions conduct an assessment of their infrastructure and special needs, such as their voltage and connection requirements, so that properly sized generators can be provided.

Whether VDEM received requests via phone or fax – in the proper format or not – it did not have a satisfactory procedure to report back the status of filling the request. Frequently, local governments and citizens had no idea if what was requested was actually in process, except that, at some point, they would hear a shipment was arriving and then had to make arrangements to receive and distribute the resources. In many instances, the trucks did not arrive when promised and volunteers would assemble at distribution centers to unload and deliver supplies only to go home many hours later without receiving a delivery. Citizens lost confidence in their local and state governments' ability to handle the disaster. This loss of confidence aggravated an already stressful situation in the local EOCs. Tired of waiting or getting bad information about the timing and location of deliveries, local officials turned elsewhere to obtain what they needed. Some acknowledged that exhausting all local resources should have been done before asking the state

to intervene. However, the rules on federal and state reimbursement were not clear to many at the local level, and they believed they had to requisition the state or else absorb all the costs locally.

Reserve Personnel

FEMA and VDEM both used dozens of disaster reservists, many of whom began their shifts without having situational awareness briefings from the previous shift. FEMA ERT-N reservists came from different states where operational procedures were different from those in Virginia. Communities throughout the disaster area complained that two, three, sometimes four or more FEMA representatives would ask the same questions only hours apart, demand to receive the answers in a particular format, and then be unable to answer even the most basic questions raised by the local government. There did not appear to be a clear plan for utilizing FEMA personnel. They arrived en masse, sometimes working directly with local EOCs, contrary to standard procedures requiring everything to be coordinated through VDEM's EOC. This situation caused much confusion. One fire chief stated, "the state's EOC *must* provide more reliable and consistent information for emergency managers to make sound decisions…. this also pertains to FEMA." More on communications, FEMA, and VDEM is discussed later in this report.

Ice

Ice, or the lack of it, was one of the biggest problems to arise in the aftermath of the storm. It was the thing that almost everyone wanted, only a few really needed, and no one could supply in adequate quantity at the right time or in the right place. In short, ice became a disaster in and of itself.

It is not clear how ice instantaneously became a "must have" commodity. The Team's best understanding is that a power company in Maryland began offering ice as a way of quelling customer dissatisfaction with power outages. Apparently a jurisdiction in Virginia heard of the availability of ice, and like wildfire, the expectation that government should supply ice ignited a demand that officials could not meet.

Why ice? Water, generators, food, medication, and oxygen: these indeed are essential to life and health. Unfortunately, while state and local governments were grappling with the means of supplying truly critical supplies, ice took center stage and became a logistical and political nightmare that consumed time and diverted personnel to the task of trying to line up distribution centers, delivery, and offloading to refrigeration trucks that were in extremely short supply. Local governments took it on the chin from understandably irate citizens who stood in lines for up to eight hours, only to walk away empty handed because the ice never came – or arrived a half day later. In Henrico County, ice truck drivers actually refused to unload their cargo because the people who had to sign the paperwork were not present. The fire chief had to come to the scene to approve offloading the ice.

Ice is important in keeping certain drugs from deteriorating. Hospitals, nursing homes, and assisted living centers store medications. Such facilities should be required, as a condition of licensure, to show the ability to maintain medications, generate power, and supply water if they lose power. Certainly all such facilities should be on the power companies' top priority list for power restoration in the event of widespread power failures.

The Team's findings indicated that most people wanted ice in order to prevent refrigerated and frozen food from spoiling. As expensive and inconvenient as replacing food may be, it is questionable whether ice was an absolute necessity in comparison to other needed resources, especially considering the bad will and frustration created by unsuccessful attempts at acquiring and distributing it.

Not every community asked for ice. Norfolk, for instance, said it never requested ice, but it was contacted by the VDEM to report that ice was available. Conversely, Greensville felt that ice was a critical need and spent a lot of time and energy trying to procure some. Absent deliveries from the government, Greenville contacted the local Perdue plant, and the plant provided all the ice required.

Some jurisdictions feared that by providing ice they might inadvertently contribute to episodes of food poisoning, or worse. It was discovered that some individuals believed that even if food had already defrosted, refreezing it would eliminate any potential contamination. Arlington County, for example, distributed a public education flyer with every bag of ice they provided. The flyer provided specific guidelines about spoilage.

With some exceptions, the resource supply system did not work. From the federal government down to individual citizens these serious issues conspired to create chaos:

- Serious communications problems.
- Unfamiliarity with the requirements for requesting resources.
- Inadequately trained (though hard-working) disaster reservists.
- Poor documentation and follow through.
- Insufficient management oversight.
- Unrealistic expectations.
- Lack of a tested, in-place resource management system.

There is much to do at all levels to correct the problems so that in the future, tracking and filling requests for all critical needs during a major event can be accomplished. We outline some of the more important options to consider in the recommendations section of this report.

Electrical Power

When 1.8 million people lose power in a 24-hour period, power companies and governments are faced with an extreme situation. Isabel's winds uprooted trees, including many in the right-of-way, which fell on power and telephone lines and cut service to everything from household appliances to water and sewer pumping and treatment stations. Homes in low-lying areas served by wells, propane tanks, and septic systems faced their own problems as flooding contaminated wells and affected underground tanks. The loss of electricity at these properties, mainly located in rural areas, meant a total loss of water.

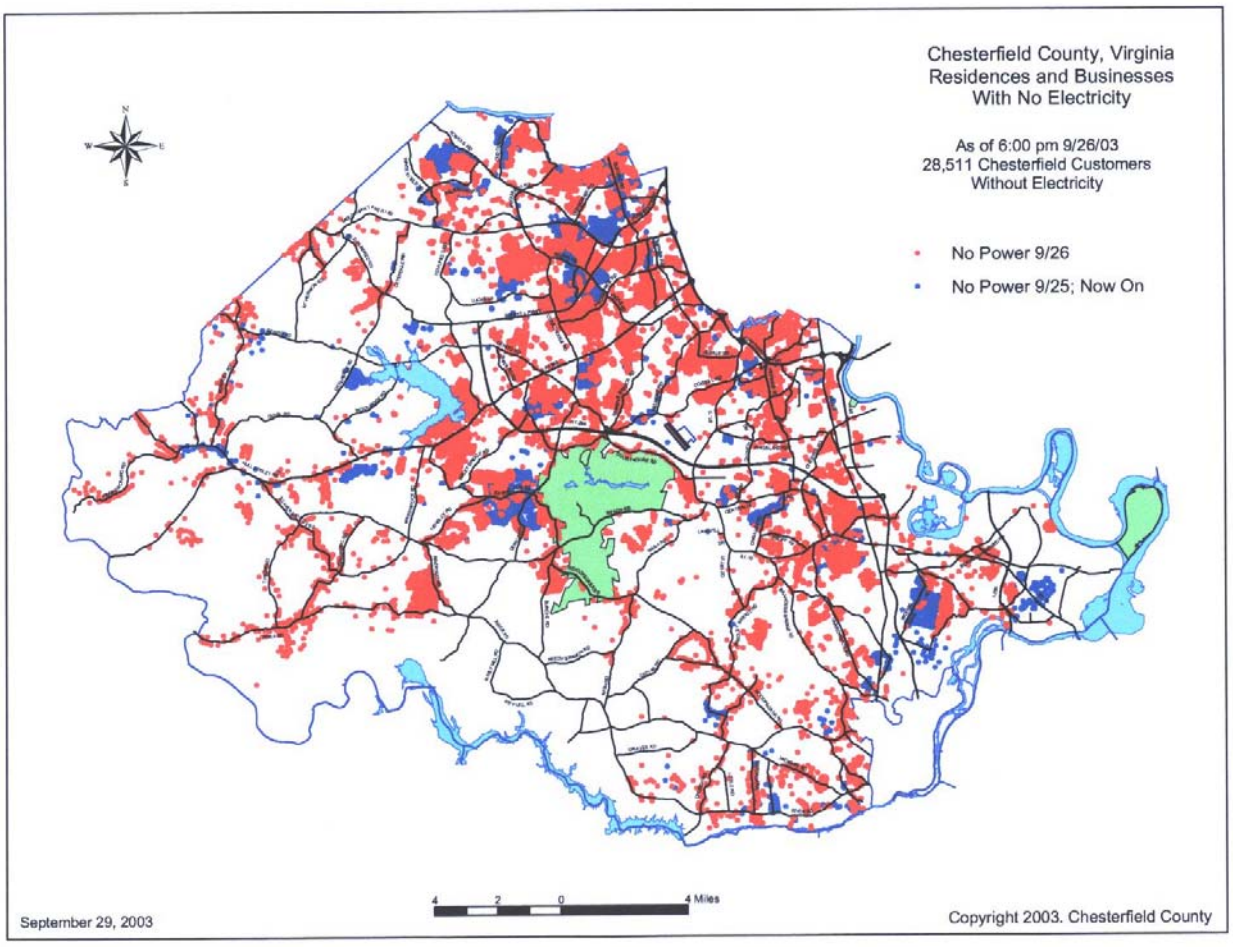
Given the amount of advance warning of Hurricane Isabel, plus experience with previous power outages from ice storms and blizzards, some people and institutions had the foresight to purchase generators and stockpile fuel. Most, however, were left with either no alternative power source, or with a generator but not enough fuel.

Many aspects of daily life were affected. No power or phone lines meant no refrigeration, cooking, land lines for telephone, television, lights, computer, business, traffic signals, elevators, fax machines, gas stations, and so forth. In some areas no power meant contaminated water, loss of most forms of communications, activation of emergency back-up systems, and a rush to purchase generators, batteries, and portable radios. Despite warning labels and in some cases, information flyers sometimes distributed at the point of sale, people did not always follow safety precautions. Ignorance about the inherent dangers of generators and carbon monoxide poisoning contributed to three of the 31 hurricane-related deaths.

Local governments asked VDEM for generators while families that already had generators searched for fuel as the time without power grew longer. Some emergency shelters did not have emergency generators and had to close their doors. What people affected by the loss of electricity wanted desperately was information about when the power would be restored. It seemed almost impossible to get direct answers and concrete feedback on what schedule the companies were following to restore power. The power grid is a confusing concept to many people, but even knowing how the grid works did little to alleviate concern or help disaster personnel establish citizen assistance priorities. Half a neighborhood might experience the resumption of service, while the other half lay in darkness for several more days. A few nursing homes and assisted living facilities discovered that the utilities' priority list did not include them.

Chesterfield County was one jurisdiction that persisted and eventually succeeded in getting more than the standard, noncommittal response from the electric power company. After maintaining that it was not possible to give out detailed information on who lost power, the company finally identified the addresses (but not the names to protect confidentiality) where power was out. Chesterfield then used their GIS system to produce a map (as shown in Figure 1) that indicated which neighborhoods and streets, or parts of streets, had no power.

Figure 1. ***Chesterfield County GIS – Residences and Business without Electricity***



Overlaying the power company information with their own water and sewer data, county personnel mapped where people were most at risk so they could set priorities for outreach and services. Many homes in the southern and western part of Chesterfield County rely on wells, so without electricity they also were without water. Using the power company data, Chesterfield also was able to combine data on wells with data on power losses to produce another map.

State police, VDOT, Department of Corrections, and utility company employees worked tirelessly to restore power as fast as possible – even if information about progress was difficult to obtain. Over the course of the emergency, the agencies often worked in teams. Even before the hurricane had ended, some state troopers began cutting trees and removing debris that blocked roads and interfered with fire, rescue, and emergency medical service access. This was a dangerous undertaking since many of the trees were still entangled in downed power lines, and without the power company on the scene, a trooper could not be certain if the lines were energized or not. It is VDOT's policy to avoid working around electric wires until the power company has confirmed that the wires are not live. According to the Superintendent of the VSP, he immediately informed VDOT's Commissioner at the state EOC of the problem and the VDOT Commissioner quickly dispatched VDOT units to help the troopers.

VDOT and Tunnels

Neither emergency management personnel nor weather forecasters expected Hurricane Isabel to produce such a significant tidal surge as the one that moved through the Tidewater area and aggravated flooding.

One significant event that occurred during Hurricane Isabel was the flooding of the Midtown Tunnel in Norfolk. Several factors led to this incident. The computer-based HURREVAC system, which conservatively predicts storm tracks and storm surge based on historical models, appropriately forecasted the most probable effects of the hurricane. But factors that cannot be incorporated into the modeling program complicated flooding, which put the Midtown Tunnel out of service and threatened the lives of several personnel.

The Midtown Tunnel originally was constructed when the city was far less developed than it is today. The new roadways, highways, commercial properties, and residences have impeded the ability of Norfolk's storm sewer system to handle large volumes of water produced by significant storms. When an event like Hurricane Isabel occurs, the system is quickly overwhelmed and the extra water is pushed into the streets. It was this water run-off that built up in low-lying areas near the tunnel. Heavy rains in the period directly preceding the hurricane had saturated the ground, making it less tolerant of heavy hurricane-related rains and producing more runoff into the streets.

Human error also was a factor. In an effort to control vibration from the tunnel traffic and to prevent loosening of floodgate seals from vehicle traffic, a decision had been made to spot-weld the plates to prevent them from becoming dislodged. This was to have been done in such a way that the welds could be broken immediately if it were necessary to raise the gates during Isabel. Miscommunication led to a delay in removing the welds. When tunnel workers finally did try to remove the welds, they were running out of time and were working without proper equipment. The volume of water rapidly being introduced into the tunnel was too great and forced workers to abandon the effort before the welds were removed. The tunnel flooded while they were exiting. The cost of damage was just under $1 million. Workers had to extract 44 million gallons of water and repair damaged electrical and mechanical systems.

At the Hampton Roads Bridge tunnel there were problems with operating the floodgates. VDOT immediately conducted an in-depth review and found that routine maintenance had not been conducted. The department acted quickly to identify the underlying causes of problems at both tunnels and took immediate corrective measures.

Since Hurricane Isabel, transportation officials have taken steps to avoid a similar occurrence in the future. Alternative construction techniques, such as the use of Teflon bolts instead of spot welding on the flood gate plates, and better communications policies have been implemented to ensure error-free use of the flood protection mechanisms in the tunnel.

Debris Removal

Almost all of the individuals who spoke with the Team noted that recent policies and procedures for clearing rights-of-way were responsible in large measure for the sheer amount of tree fall along the right of way, and the resulting power losses. Two years of near drought-like

conditions followed by record-breaking precipitation in 2002 and early in 2003 caused trees to develop shallow root systems that sat in soft soil. Older trees, especially vintage oaks, suffered the most. Hurricane Isabel caused many of them to fall, upending the entire root ball.

Six weeks after Isabel destroyed countless trees, counties in the hardest hit areas were still confronted with tons of debris waiting to be picked up and moved. According to VDEM, the amount of hurricane-related debris was unprecedented, with estimates running as high as 20 million cubic yards (equal to 200,000 football fields) and sufficient to fill more than 660,000 dump trucks. From a citizen's point of view, debris is debris and where it sits should not make a difference as to when or how it is removed. From government's point-of-view, where debris is piled makes a lot of difference because the state is responsible for state right-of-ways, and city and county governments are responsible for their roads. There is also the matter of federal reimbursement, who is authorized to contract for debris removal, and what debris actually qualifies. The bureaucratic delays in clearing unsightly and rotting piles of branches, leaves, stumps, root balls, and other woody debris complicated the process, and frustrated residents.

There actually were two issues: debris clearance and debris removal. Most citizens understood that the major roads and the streets around hospitals, fire stations, police stations, nuclear power plants, and shelters had the highest priority for utility companies, VDOT, State Police, the Virginia National Guard, the Department of Corrections, and the Army Corps of Engineers – all of whom played a role in making roads passable for travel as soon as possible after the hurricane. Afterwards, the task of removing those tons of debris was formidable. Chief among the concerns was how to obtain enough workers and vehicles to haul away the debris, and then where to take the debris. Urban landfills swelled with dumped woody material.

One jurisdiction that has its own operation for recycling woody waste and generating power wanted to store the debris at a landfill until they had room to process it, but state environmental quality regulations imposed restrictions that conflicted with this efficient (and ultimately more environmentally friendly) solution to handling the debris. It was impossible to transport all of the debris quickly so long as it lay along curbs and roadsides. Rodents became a problem. Vector control arose as another service that had to be provided, and another cost that had to be covered.

Residents and governments faced other headaches with debris removal, including price gouging by greedy or unscrupulous private haulers, some of whom left the heaviest limbs or trunks and carted away only lighter material. There were also contractors that refused to work for FEMA because of previous reimbursement and contracting problems.

Right-of-way maintenance is caught in the middle of two different interests: the environmentalists that lobbied successfully for restrictive policies on how and how much cutback was carried out along the right-of-way, and transportation and public safety interests in keeping a wide-enough margin between paved roadways, utility lines, and vegetation. The state needs to examine policy options for the future.

Communications

The most basic ingredient in any disaster response is communications. There are technological communications challenges involving equipment, signals, power, satellites, and channels; and there are human communications challenges involving training, procedures, and supervision. During Hurricane Isabel, both categories of communications suffered breakdowns.

Severe and widespread power outages seriously hampered communication. With no electricity, governments and citizens could not rely on computers, the Internet, fax machines, printers, or television to send or receive emergency information. Downed phone lines and cell towers interrupted land and cell phone connections. For residents lucky enough to find batteries, they could remain informed via battery-powered radios or small televisions. Disaster workers, first responders, and amateur radio operators could connect through their respective radios, but for a critical span of time, many Virginians were left with no immediate means of communication. State and local governments had to create other ways to transmit important messages, conduct damage assessment, check on at-risk populations, and coordinate status reports, including requests for assistance and resources beyond that which a locality could handle on its own.

The Polycom system operated by the Department of Health allowed regional and local health departments to stay online during the entire incident. The blast-action Health Alert Network system worked well for field alerts to health practitioners and pharmacists, sending requests that they relax certain prescription rules and Medicare requirements regarding payment until conditions returned to normal.

A few communities utilized reverse 911 to broadcast community alerts, which worked as long as telephone service remained intact. Ashland, Dinwiddie County, and other towns and counties distributed flyers door to door in an attempt to circulate response and recovery information.

Counties and cities that fared best were the ones that had their own public radio stations. Bath County, for example, established their own station years ago and uses it on a regular basis to reach homebound residents and others with information of local interest. Therefore, when an emergency occurs, Bath County residents are familiar with the station and tune in to get news. The vast majority of local leaders we talked to expressed concern over reaching their constituents with critical safety information during the hurricane, and said they intend to investigate ways to correct the problem. Sponsoring a radio station was the most common solution noted. Alternatively, a jurisdiction could negotiate with a local college radio station, or other stations, for priority airtime to broadcast emergency information.

The problem with commercial radio stations that serve a regional audience is that the programming now often is directed by a management office in another part of the country. This makes it harder to get agreement for redirecting the broadcasts in the event of a local emergency. Weather forecasts on these stations are regional. The stations cannot focus exclusively or even heavily on only one part of their listening area. Citizens wanted and needed to know how the storm was tracking and the expected impact on their immediate community. They viewed as less essential the forecasts and information related to other states and locales. The situation was

likened to snow storms that cause school closings. In the northern Virginia area, for example, one must wade through a long list of schools that are located in Maryland, the District of Columbia, and all of northern Virginia before catching the school district of interest on the streaming news line.

The state EOC held teleconferences every day. The idea of these meetings had merit, but the way they were handled drew criticism. Examples of comments made are as follows:

- The calls lasted too long, and were too drawn out, too cumbersome, and too confusing.
- Phone briefings were chaotic and gave conflicting information.
- There were too many jurisdictions on the call at one time, and the information relayed was not timely.
- The state demanded damage assessments within 24 hours, and then did not communicate anything back after local EOCs met that demand.
- A lot of time was wasted because the calls were not organized and did not follow a set agenda or format.
- Local officials made resource requests during the calls, expecting that this was one of the reasons the calls were being conducted. They expected that their requests were being noted and would be honored, *especially* since the state specifically asked what assistance and support local agencies needed.

The state EOC experienced technical problems with their computers during the early stages of recovery, which apparently caused the loss of some requests. The state EOC was operating on generator power, and the Internet service provider equipment kept tripping, interrupting the database. Generator power is not as precise as conventional power and it did not adequately support Internet connections. VDEM is correcting the problem.

Aside from technical communications problems, the state EOC struggled with major procedural and organizational problems in terms of communications. However, these problems must be considered in light of the seriously inadequate space and facilities in which VDEM personnel and others had to operate.

VDEM relies heavily on disaster reservists to augment staffing during emergencies. The system that was in place and through which the reservists needed to operate, lacked several essential capabilities:

- Procedures for follow-up.
- A means for controlling message integrity and consistency.
- Task familiarity training.
- Status updates between shifts.
- A plan for adequately integrating FEMA's team into the state's operations.

Both local and state representatives concluded that too many people from different organizations were functioning on an ad hoc basis, were too often giving incorrect and inconsistent information, or were failing to respond altogether to inquiries from the field. Moreover, the reservists were often assigned to critical positions for which they were not as capable or experienced as the core VDEM staff.

Several state officials complained that the state EOC is not equipped with an adequate communications system, nor does it use the latest crisis and consequence management software programs. Records management is particularly problematic. The Team agrees with this assessment.

Several years ago, VDEM ran disaster communications and response and through regional sectors, and assigned specific personnel to coordinate and control assistance to their respective regions. That structure was abandoned. Had it existed, it is likely it would have prevented many of the breakdowns in communications between state and the local agencies. The basis for effective state-local coordination and pre-disaster preparation was lacking before Hurricane Isabel arrived. Therefore, it is not surprising that problems multiplied with the high demands on a system that organizationally and functionally was insufficient at the onset.

The State Police Superintendent told the Team that VSP's communications system is 25 years old and clearly antiquated. He is looking into replacing the current radio communications system. Both VDOT and the Department of Health and Human Resouces operated out of their own EOCs during the hurricane, though they had links into VDEM's EOC.

FEMA's Response Team

State and local officials recognized that FEMA brought assets to the state and made contributions to response and recovery. However, many participants in this study expressed frustration with what appeared to be poor pre-planning. The national response team seemed unfamiliar with the proper chain of communications between local governments and the state and with its own role in disaster coordination. Many officials that were interviewed stated that FEMA representatives were overly bureaucratic and autocratic, and duplicated efforts. For instance, FEMA would come to affected communities asking the same questions over and over again with each visit. Generally these people were never heard from again, and the requests and information which local agencies gave to FEMA were not acted upon, according to several respondents.

VDEM and FEMA tried to dovetail operations, and a lot of resources did ultimately arrive in disaster areas. State statistics indicate that more than 100 FEMA disaster personnel reported for duty. Six million pounds of ice were delivered, 150 generators were provided, and ultimately 1.5 million gallons of water arrived at distribution centers. Disaster recovery centers operated at 38 sites.

FEMA received good marks from most governments on financial assistance and the timeliness of its response. The state also did a good job with disaster unemployment and housing-related assistance applications. In Fairfax County, however, supervisors were upset over FEMA's ruling that a condominium complex ruined by flooding did not meet their eligibility

requirements for assistance. Claiming that condominiums are for-profit business enterprises, rather that merely a form of real property ownership, FEMA declined to process assistance requests. Meanwhile, there are over $5 million in damages to the condominiums, and only about $1 million in insurance. The residents have been forced to live elsewhere for an extended period of time, taking showers at a county recreational facility nearby. Research into condominium legislation indicates that FEMA may be in error.

PART B. RESULTS FROM THE QUESTIONNAIRE

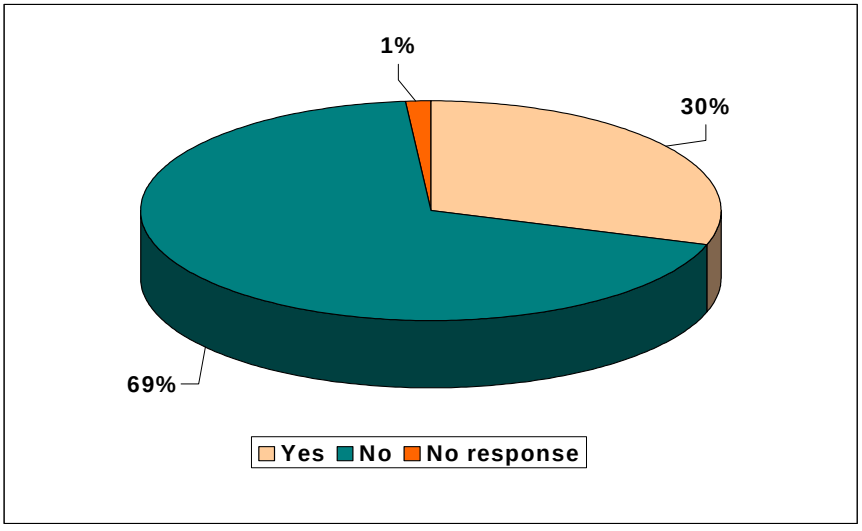
The Team received 76 completed questionnaires from state and local officials who took the time to answer 56 questions and write comments to describe how Hurricane Isabel affected them, how they responded to it, and what experiences they had with interagency coordination. Of those, two responses arrived more than 10 days after the due date, too late to be included in the database tallies and summaries. However, comments from those two jurisdictions were used to help form the basis for the Part A discussion. This part of the report provides the results of answers to the questionnaire, section by section.

Disaster Training and Experience

Most of the individuals who completed the questionnaire are experienced in handling emergency preparedness and response. Forty percent have ten or more years of experience; five of those individuals have 20 or more years working in this field. Twenty seven percent have 1-5 years of emergency management experience and 14 respondents did not answer the question. The experience that was noted is supplemented by a broad array of training including crisis communications, state and federal training on emergency planning, Department of Defense training, hurricane exercises, hazardous materials and incident command training, disaster recovery, degrees in public safety, and various drills and table top exercises. For many, Isabel might have been the first hurricane with which they have dealt, but it was not the first time they have responded to a disaster.

As shown in Figure 2, some of the communities and state agencies have conducted or participated in a hurricane response exercise within the past three years. Responses indicated that 30 percent had participated in such exercises, 69 percent indicated their agency or jurisdiction had not, and one person left the question blank.

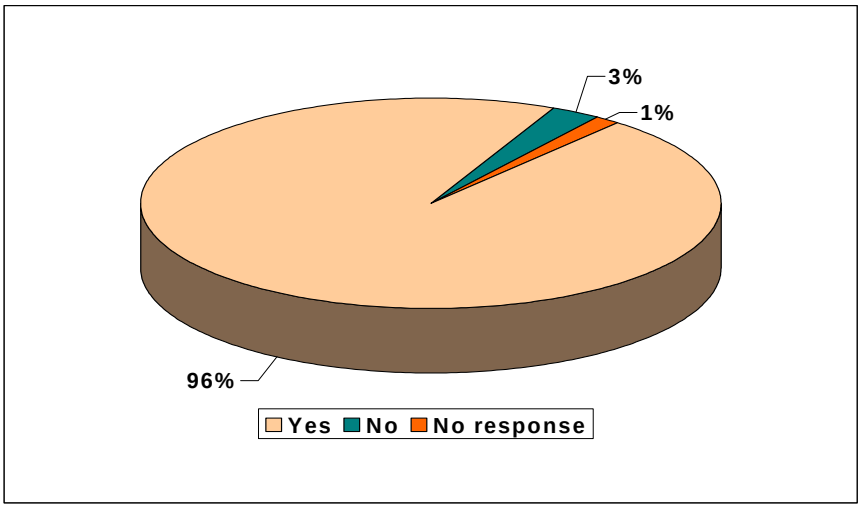
Figure 2. Have you conducted or participated in a hurricane response exercise in the past 3 years?



Preparing for Isabel

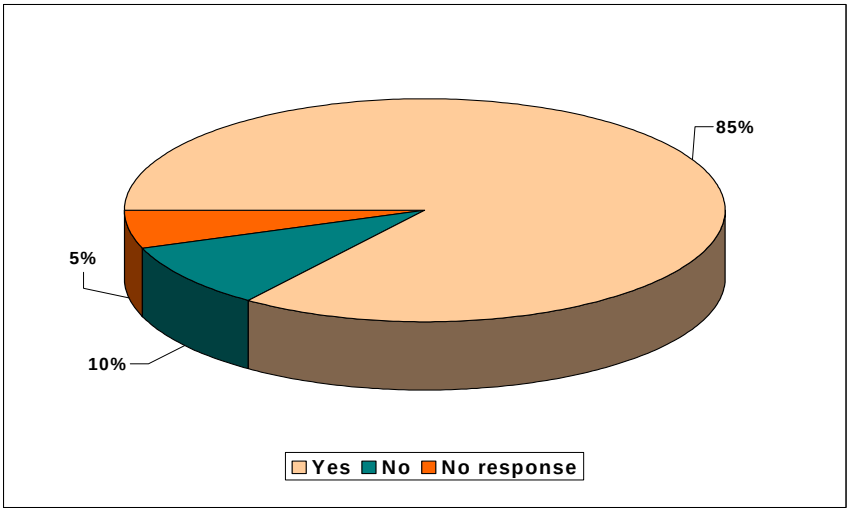
Eight questions pertained to the time period immediately prior to Isabel's arrival in the Commonwealth. During the Team's work in the field virtually everyone expressed satisfaction with the National Weather Service and the accuracy of its forecasts. Ninety six percent of the respondents (see Figure 3) said that the advance warning and notification system was adequate in indicating the level of damage that occurred. Only two respondents said that forecasts were not adequate, particularly with regard to tidal surge notification. Even with the best forecasts and warnings, though, noted one respondent, "unless people have actually been in high sustained winds or high tide surges, they cannot appreciate the damage that can be done."

Figure 3. Was the advance warning and notification system adequate for the level of damage?



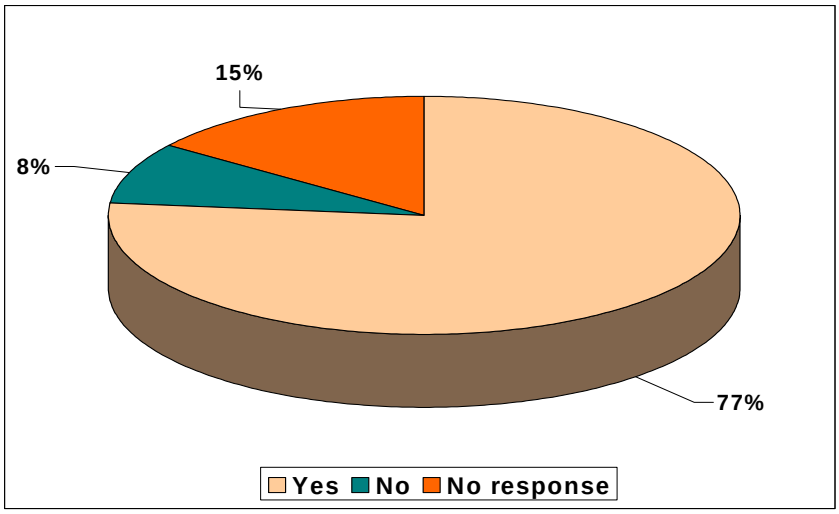
The Team was interested in whether local governments were operating with an approved Emergency Operations Plan (EOP), an essential element of local preparedness planning. Eighty-five percent of respondents in the database answered in the affirmative; 10 percent said they did not have an EOP (see.Figure 4.)

Figure 4. Do you have a written Emergency Operations Plan adopted by your Council or Board?



Forty-three EOPs were updated since the year 2000. As to whether the EOP provided adequate guidance to prepare for, respond to, and recover from Isabel, 77 percent of the questionnaire participants believed that the EOP was very helpful, and that they followed the guidance in the plan (see Figure 5.)

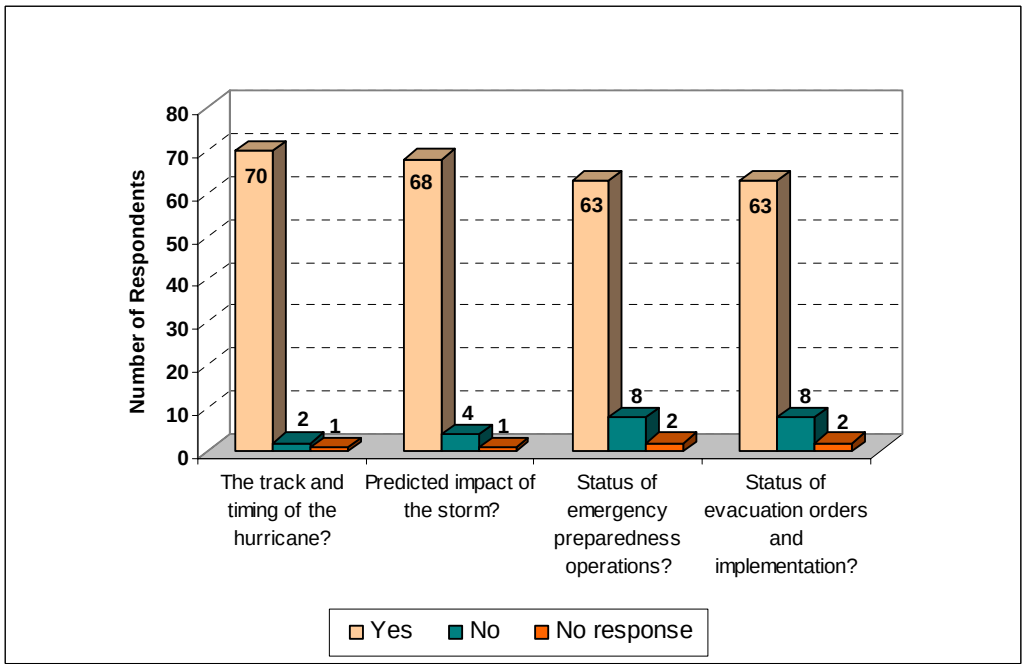
Figure 5 If you have an EOP did it provide adequate guidance to prepare for, respond to, and recover from Isabel?



The Team asked what communities did if they did not use an EOP. Response was light, but indicated that they either worked with staff at the county level, created a version of an EOP at the time, or used VDEM's EOP, in addition to their own.

The Team inquired about the extent to which state and local agencies received accurate and useful information about four key topics on preparing for the arrival of Hurricane Isabel. The results are shown in the following Figure 6.

Figure 6. Did you receive accurate and useful information regarding the following?



Only 23 of the 73 respondents answered the question on whether agencies and communities used specific hurricane evacuation data software, preplanned evacuation routes, or other EOP information to make decisions about evacuation. This result is probably due to the way in which the question was worded. The next two questions dealt exclusively with the HURREVAC 2000 software for evacuation planning which some jurisdictions used for the first time during Isabel. Thirteen responses were in the affirmative, leaving 60 questionnaire participants that either said they did not use HURREVAC 2000 or left the question blank. Since many communities did not have to evacuate any residents, the number of responses was expected to be low. The communities that used HURREVAC 2000 found it to be a good tool. There were statements like, "Excellent, HURREVAC 2000 accurately predicted the storm's path", "Excellent…until the Internet went down," and, "The software is a very helpful tool."

Sheltering

One of the most telling statistics to reflect the magnitude of Isabel's impact on Virginia is that 73 percent of the respondents said they had to provide temporary shelter to at least some of the citizens in their jurisdictions, and 36 percent sheltered evacuees from other localities. According to information from VDEM, 6,000 individuals occupied 134 shelters statewide, and an unknown number of residents sought refuge with relatives or friends outside the impact area. (See Figure 7 and Figure 8.)

Figure 7. Did you have to provide temporary shelter to your citizens?

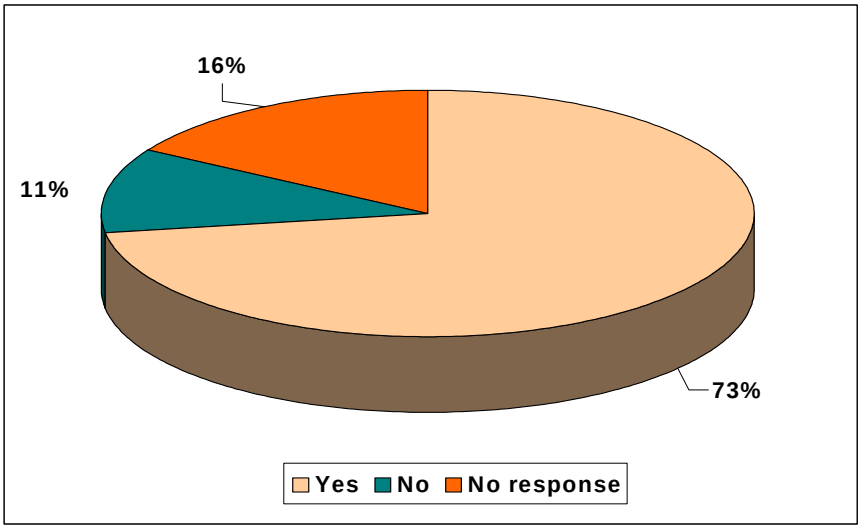
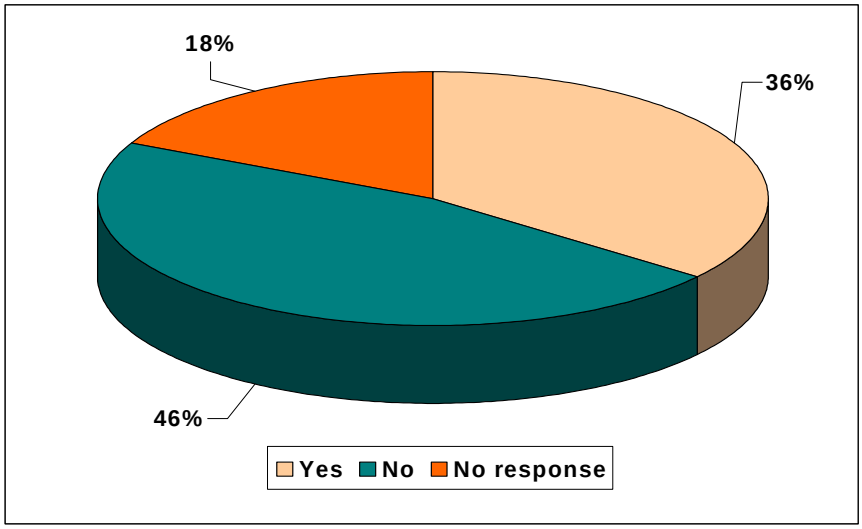


Figure 8. Did you have to provide temporary shelter to evacuees from other localities?



As discussed in Part A, emergency officials encountered a number of problems at shelters including the need for interpreters, medical care for a portion of the sheltered population, infant formula and soy milk, better accessibility features for the mobility impaired, and staff in the few cases where coordination with the Red Cross fell short. Some shelters did not have generators for emergency power. Shelters are run at the local level and are staffed in different ways, but mostly with a combination of resources from the private, nonprofit, and government sectors. Many are staffed by Red Cross personnel. The Team delved into some details about shelters and the results are shown in Figure 9 and Figure 10.

Figure 9. Are all the shelters in your jurisdiction…?

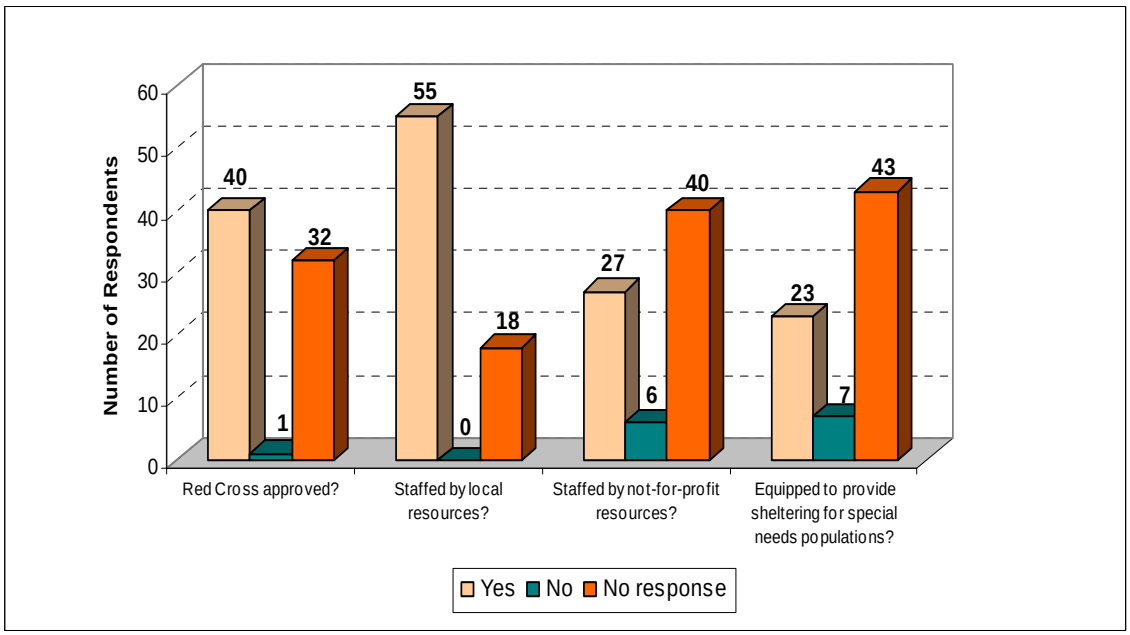
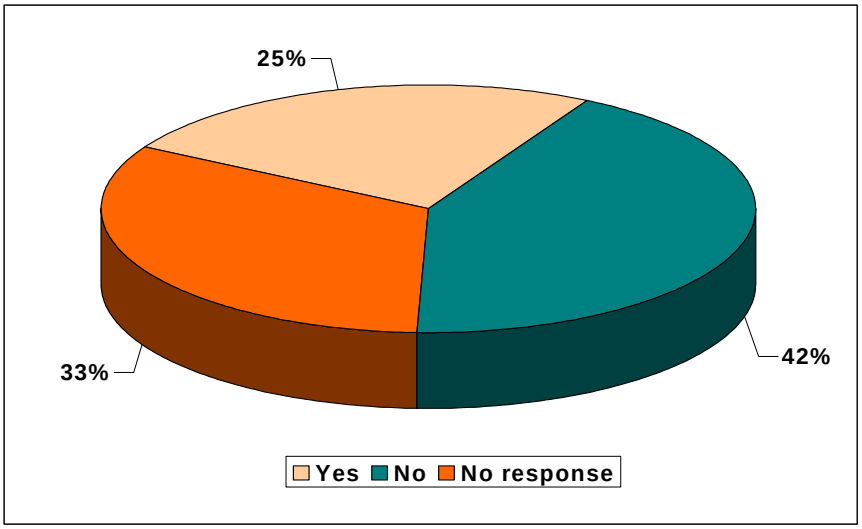


Figure 10. Did the private sector help in sheltering special needs populations?

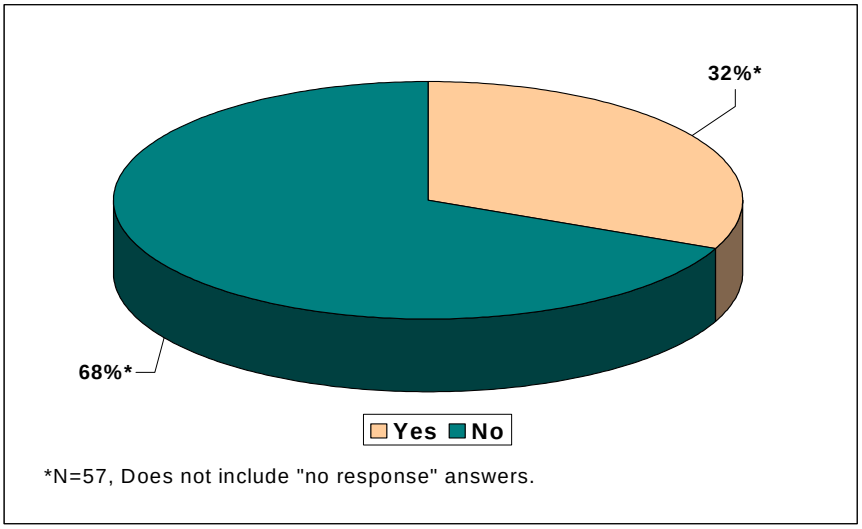


The Team obtained more detailed information about shelter requirements for serving special needs populations (see Table 1.)

Table 1. What particular resources are needed to shelter special needs populations, and did you have those resources?
Most frequently cited needs (in descending order).
Nurses/medical staff/support staff
Generators and refrigerators at shelters
Oxygen
Handicap accessibility and fully functional special needs areas
Cots and showers
Interpreters
Access to home healthcare nursing
Adequate bedding
Private/semi-private rooms
More shelter locations

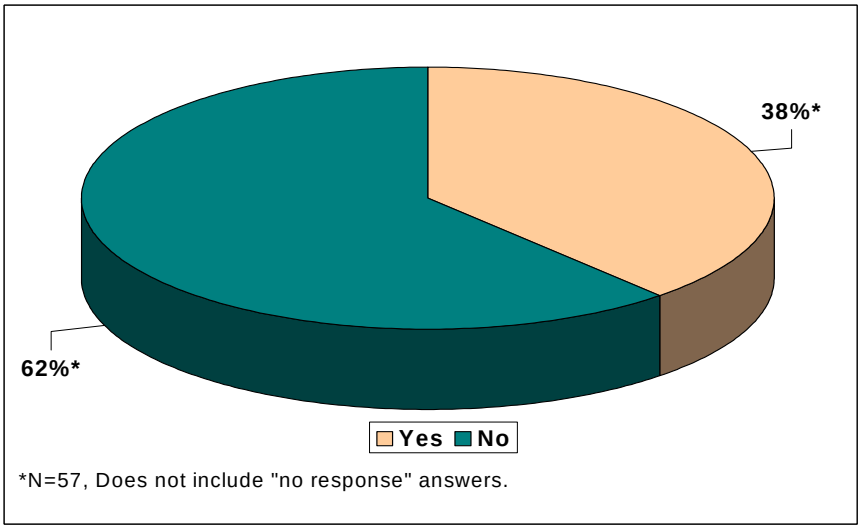
Of those individuals who answered the question, "Were there enough shelters and food to accommodate all who needed shelter?," 94 percent indicated there was a sufficient amount of shelters and food to meet the demand. Of the 57 individuals who answered the question about having designated locations for evacuees, only 32 percent have designated a specific place where residents can go if they are evacuated from the area (see Figure 11.)

Figure 11. If an evacuation order is given, do you have a designated shelter location outside your jurisdiction to which you can direct your evacuation population?



Some local governments worked together to provide shelters during emergencies. Thirty-eight percent of those who answered the question stated their communities conduct shelter operations jointly, but only eight respondents confirmed they have written agreements for combined shelter operations (see Figure 12.)

Figure 12. Does your jurisdiction conduct shelter operations jointly with surrounding jurisdictions?

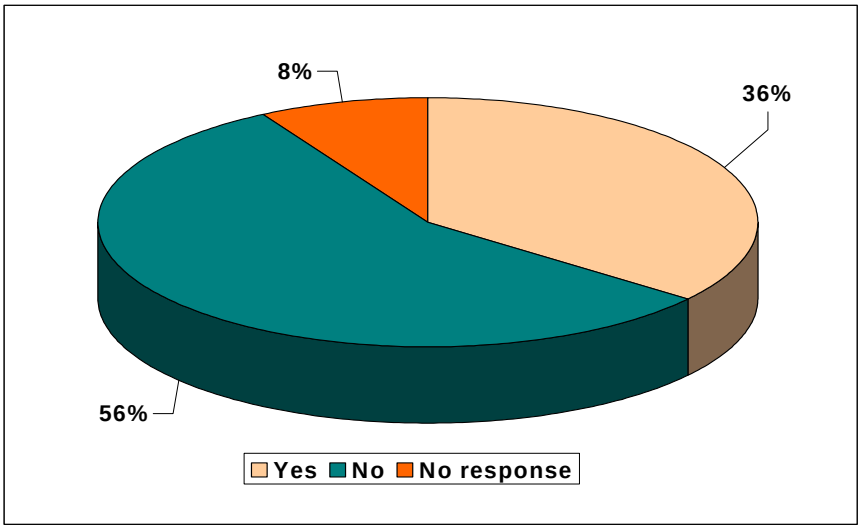


Almost 60 percent (43 jurisdictions) said they would agree to host evacuees and provide shelter if so requested.

Communications

Virginia's local governments and state agencies depended heavily on various means of communication to advise citizens about the expected arrival time and impact of the hurricane and to call in disaster response personnel to handle response and recovery operations. Thirty-six percent encountered impediments to warning citizens and broadcasting advisories about what to do. While virtually no one expanded on that response in the questionnaire, participants the Team said it was hard to acquire radio time for up-to-the-minute public safety reports. Reverse 911 and pamphlets were resources that some communities used to publicize important safety information in the days leading up to Isabel's arrival (see Figure 13.)

Figure 13. Were there any impediments to alerting and warning citizens about the approaching hurricane and providing advisories about recommended actions?



Government employees involved in disaster operations were reached by several means, and usually by a combination of communications. Again, there were some communications difficulties. Table 2 details how agencies contacted their personnel.

Table 2. How did you contact responders and other public sector employees within your locality about revised work schedules, temporary assignments, office closures, and redeployment to alternate sites?
Most frequently mentioned contact methods (in descending order).
Telephone (landline)
Media/news (TV – Radio – Cable)
Cell phone
Paging systems
E-mail
Pre-existing emergency plans for communications and scheduling
Web/website
Briefings/staff meetings
Fax
Recorded voice mail messages
Handouts and flyers to school students
Reverse 911 type system

According to the responses, some employees did not get the word about office closures, and there were instances where public safety communication was lost during the storm, leaving areas without access to first responders. The loss of power knocked out police repeaters and many communities could not fax or e-mail messages. In one 911 center all phone lines went out for over two hours. Interoperability with local and state resources was limited and difficult. There was no television or cable in many areas, and radio communications were difficult at times because of poor, outdated equipment and poor cell coverage in some counties. Days without power required some communities to disseminate information by hand. Several individuals reported that local media were not as responsive as hoped to the need for frequent news updates, making it especially hard to publicize the unique circumstances of individual communities.

One respondent said: "Electricity was out in many areas or phone lines were down so many employees or emergency responders could not be reached at their designated phone contact numbers. We need notification announcements on local radio – it had no back-up generator, but fortunately, did not lose power." Another jurisdiction reported that "...cell and telephone communications were out as well as electricity, which affected our ability to use web-based information technology and email. Communications towers and repeaters were damaged, and the computer network within the county experienced some problems."

The next set of questions pertained to how government went about the task of determining and acquiring resources. Critical supplies and other commodities came from neighboring or nearby jurisdictions, the private sector, nonprofit organizations, and through state and federal government channels. Figure 14, Figure 15, and Figure 16 correspond to questions on mutual aid agreements.

Figure 14. Do you have formal mutual aid agreements in place with jurisdictions in your region to provide needed resources?

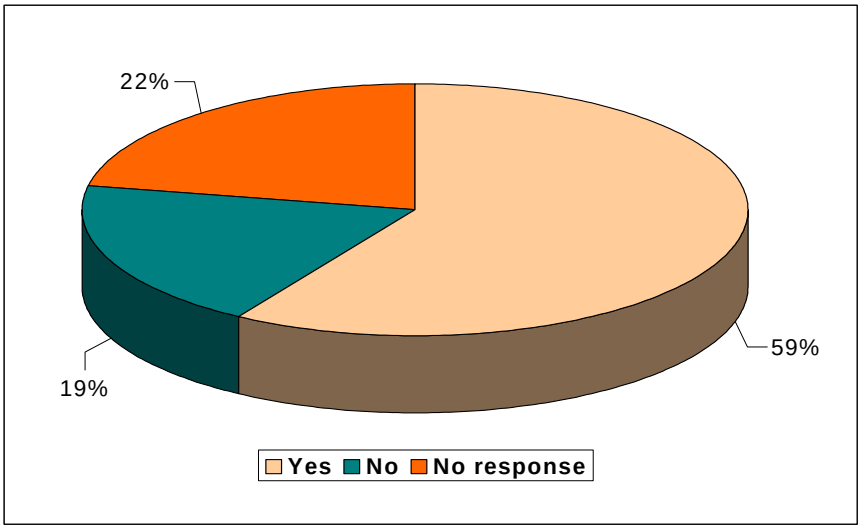
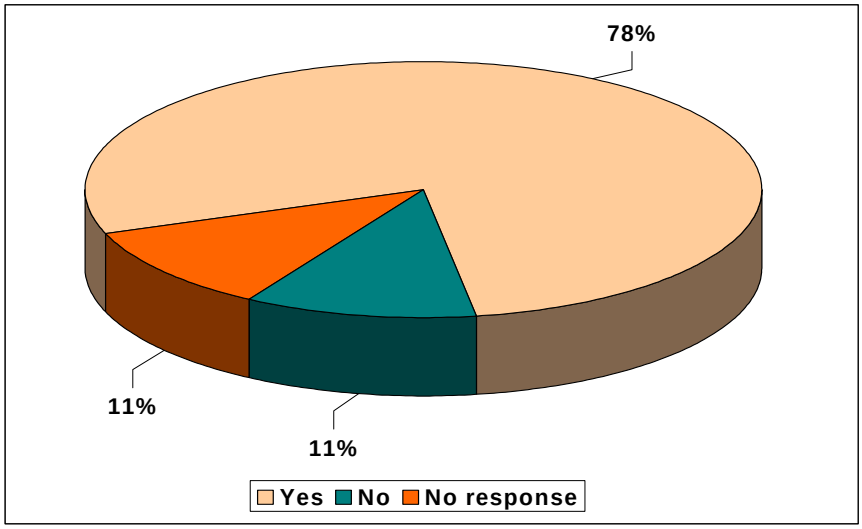
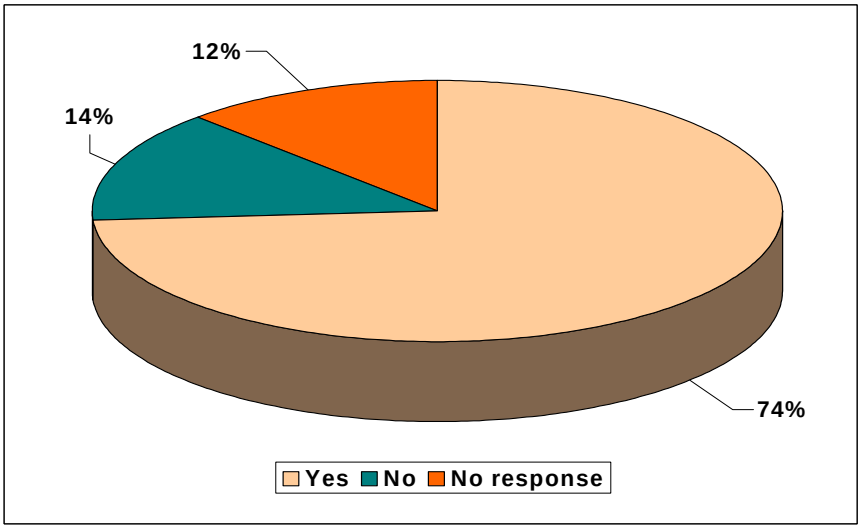


Figure 15. Outside your region?



There are many types of mutual aid agreements ranging from statewide compacts to local agreements. For the most part, if mutual aid agreements were utilized, they were the statewide mutual aid agreement or local fire, law enforcement, and EMS pacts.

Figure 16. Is your locality an official participant in the Statewide Mutual Aid Program?

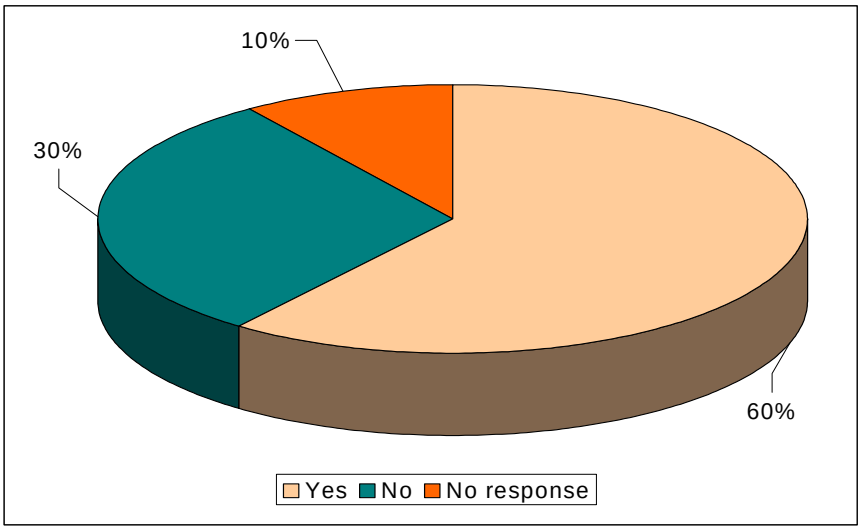


The Team inquired about how agencies estimated what resources they needed to deal with Isabel, and if the estimates were accurate. Seventy-four percent of the respondents said they did a good job of estimating their own needs. Table 3 shows the most frequently mentioned ways used to calculate needed resources.

Table 3. How did you estimate needed resources (personnel and equipment) for responding to Isabel?
Most frequently mentioned estimations methods (in descending order).
Pre-planning and knowledge from past experience
From meteorological information that indicated the potential impact
Through meetings and conference calls with EOC staff and community leaders
From minute to minute as we responded to situations
With assistance from VDEM
Through exercises and vulnerability assessments
Through communication from field divisions who assessed local needs and anticipated community disruption
From communication with local government and FEMA

The Team also sought information about how many jurisdictions were able to manage on their own. Sixty percent relied almost exclusively on their own resources. This is an important finding (see Figure 17). Only 30 percent wrote that they had to go outside local capabilities to respond to the storm (10 percent left the question blank).

Figure 17. Were your local resources adequate for responding to the storm?

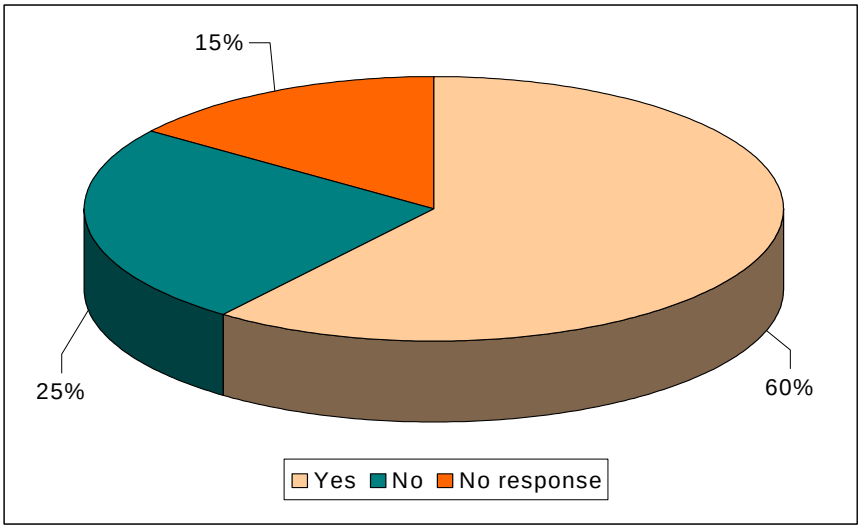


Where governments sought help from others, it is important to document who communities turned to and what they asked to have provided. Table 4 on the following page details that information. Finally, local officials were queried about whether they had adequate communications and equipment. Sixty percent reported that they did, while 25 percent said, “no” (see Figure 18.)

Table 4. Resources Requested

Source	*Resources Requested*		*On Time, Overall? (%)*	*Adequate, Overall? (%)*
VDEM	▪ Cold storage ▪ Bottled water and water tankers ▪ Cots ▪ Ice ▪ Oxygen ▪ Port-a-potties ▪ Information and advice ▪ Diesel fuel ▪ Damage assessment-post storm ▪ Generators ▪ Chain saws ▪ Hazmat removal ▪ National Guard	▪ Virginia Defense Force ▪ Food ▪ Personnel ▪ Road clearing ▪ Security to prevent looting ▪ Building inspectors ▪ Supplies for long-term sheltering ▪ Septic pump trucks ▪ Tarps ▪ Vehicles, e.g., dump tracks, all terrain vehicles ▪ Power company guidelines	Yes=34% No=30% No response=36%	Yes=42% No=25% No response=33%
FEMA	▪ Water ▪ Ice ▪ Cost recovery assistance ▪ Generators ▪ Damage assessment ▪ Reimbursement for qualified local government expenses ▪ Personnel	▪ Debris removal ▪ DRC ▪ Food ▪ National Guard ▪ Phone numbers ▪ Training for operations ▪ Public information	Yes=15% No=19% No response=66%	Yes=23% No=14% No response=63%
State Mutual Aid	▪ Firefighters ▪ EMS workers ▪ Operations staff	▪ Water tankers ▪ Recovery staff ▪ Public affairs staff	Yes=4% No=1% No response=95%	Yes=4% No=1% No response=95%
Private Sector	▪ Storage for ice (ref. units) ▪ Nursing home care ▪ Water ▪ Ice ▪ Generators ▪ Sand bags and sand ▪ Trucks, including refrigerator trucks ▪ Food for shelter and workers ▪ Forklifts ▪ Utilities ▪ Port-a-potties	▪ Chain saws ▪ Food storage ▪ Ambulance service ▪ Private refrigerators ▪ Shelters ▪ Propane ▪ Pallet jacks for unloading ▪ Debris crews ▪ Airplane engineering and inspectors ▪ Personnel and equipment to remove trees	Yes=40% No=5% No response=55%	Yes=40% No=10% No response=50%
Not-for-profit	▪ Cots ▪ Blankets ▪ Shelter operations ▪ Shelter set up assistance ▪ Food ▪ Bedding for shelters ▪ High water truck	▪ Shelter management ▪ Mobile unit with telephone for public use ▪ Radio operators RACES ▪ Mobile feeding ▪ Generators	Yes=40% No=10% No response=50%	Yes=37% No=12% No response=51%

Figure 18. Were key local personnel equipped with adequate communications tools and equipment?



Intra- and Inter-Governmental Coordination

Large-scale disasters affecting multiple jurisdictions and states pull in first responder organizations and federal and state support agencies that can easily number 100 or more. Typically, the challenge is not so much one of having enough response personnel it is one of coordinating the human, technical, and material resources at hand.

Disaster response structures exist, along with plans and procedures, and they are used every day to handle emergencies in one part of the country or another. Hurricane Isabel tested federal, state, and local planning in terms of how well government was prepared and how well it implemented its plans for coordinating response and recovery operations. In this part of the questionnaire, the Team sought state and local government insight about coordination, and how improvements could be made. How respondents rated coordination activities between government officials at different levels and between officials and the public is shown in Table 5. The best coordination, not surprisingly, was among members of the same staff, followed by local elected and appointed officials who also were rated highly for coordination. The worst ratings on cooperation were given to that between federal officials and state officials, and between local city, county, town government and the federal government.

Table 5. How you would rate the coordination activities in responding to Isabel among the following:								
	Inadequate		**Adequate**		**Excellent**		**No Response**	
	#	**%**	**#**	**%**	**#**	**%**	**#**	**%**
a. Between local elected and local appointed officials?	1	1	19	26	44	60	9	12
b. Between local elected officials and the public?	8	11	30	41	26	36	9	12
c. Between local elected officials and state elected officials?	4	5	40	55	17	23	12	16
d. Between local elected officials and federal elected officials?	5	7	40	55	9	12	19	26
e. Between state and federal officials?	13	18	30	41	5	7	25	34
f. With adjacent jurisdictions?	5	7	30	41	28	38	10	14
g. Between your level of government and the State?	11	15	30	41	23	32	9	12
h. Between your level of government and the Federal government?	17	23	36	49	9	12	11	15
i. Among your own staff?	0	0	17	23	53	73	3	4
j. With private entities?	4	5	30	41	29	40	10	14
k. With not-for-profit entities?	9	12	24	33	28	38	12	16

Improvements to Federal, State, and Local Coordination

The team solicited suggestions for improvement in the areas of federal, state, and local coordination. Input was received that fell into multiple categories, each having important consequences on the development of a truly functional emergency management infrastructure. Specifically, suggestions included changes and upgrades to communications equipment and technology, redesign of the Commonwealth's training program for emergency management personnel, renovation of the state EOC and its internal management mechanisms as they relate to local emergency management requests, and other miscellaneous improvements.

Communications

Five survey respondents mentioned the need for better communications software and equipment. Most of the mentions addressed a lack of interoperability between state and local EOCs, and an inability to track requests properly. Respondents suggested that the state either improve or replace its critical incident software package to accommodate the needs of a large incident or disaster. They also discussed the need for a secure, real-time software link between EOCs on the state and federal levels; ideally, this link would extend to the local level as well. Three of the five respondents also indicated that communications hardware should be purchased to increase the number of programmed public safety radios available for use by emergency management and responders, to facilitate wireless internet access in the EOCs, and to implement the STARS wireless emergency communications system in the Commonwealth.

The success of a communications system depends not only on hardware and software, but also on how this equipment is used and what policies and procedures exist to guide its use. Seven respondents indicated the need to strengthen communications among area jurisdictions and other agencies through better systems and management, and through the dissemination of more comprehensive pre-disaster information. Three respondents cited the need for an updated all-hazards emergency response plan that incorporates the protocols of the new national response plan.

In all phases of the incident—preparation, response, and recovery—regularly scheduled conference calls were used to share information between the state EOC and the local EOCs. Four respondents indicated that these conference calls need to be managed more efficiently in the future, and that information must be more accurate. With regard to external communications, one respondent felt that better public information procedures are necessary; another respondent felt that elected officials must be the "face" of emergency management, which was not the case with Hurricane Isabel. Similarly, one respondent believed that it is crucial to give radio stations more flexibility during local emergencies.

Training

Five respondents cited lack of adequate training as a concern. All agreed that additional training is necessary for individuals responsible for emergency management, particularly in the areas of logistics and recovery. Additional training that comprises tabletop, functional, and full-scale exercises on the federal, state, and local levels must be included as part of a sound training program. One respondent suggested that training sessions at the state level should be mandatory for local elected officials.

EOC Facility and Management

The physical facility and operational procedures of the EOC were also cited as concerns by respondents; two stated that there is a general need for internal reform in how the EOC manages incidents. Three respondents identified a need for more space in the EOC, additional staff to man stations, and an expanded cadre of state ESF and state agency liaisons in the facility. One respondent added to these observations, stating that FEMA's ESF should be located in the same location as the state emergency management staff to allow for consistent communication and task tracking.

Resource Tracking and Management

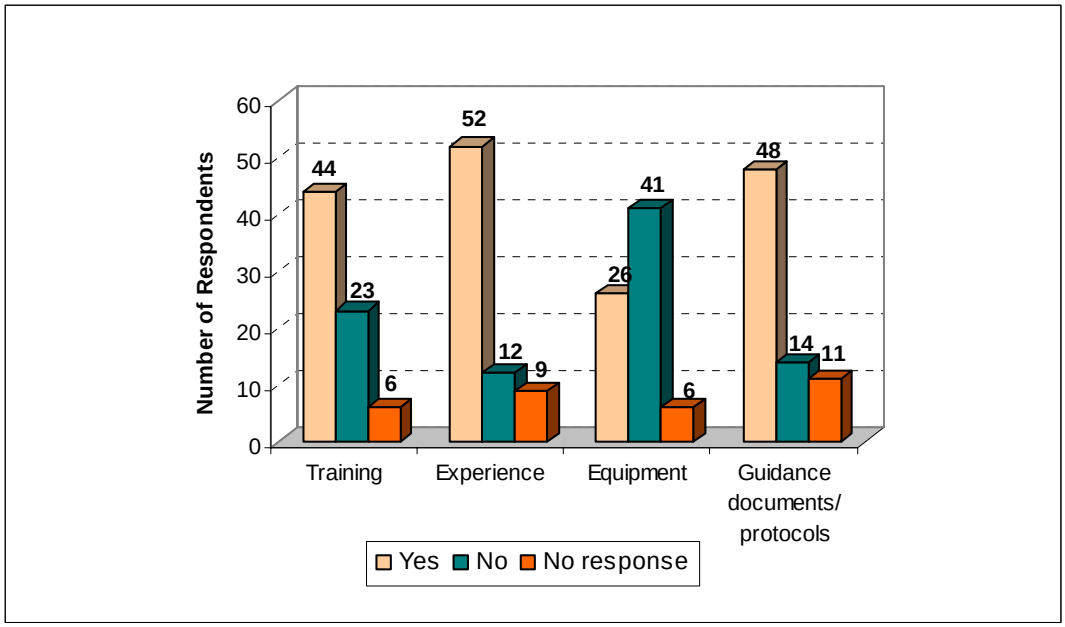
Resource tracking and allocation was also an issue identified by respondents; the consistency and availability of field personnel administering resources was also identified as a problem. Three respondents said that the state needs to have a better handle on what resources are available, how to acquire needed resources, how to track requests, and what methods to implement to improve feedback mechanisms; similarly, the state should be prepared to deliver on the items requested or advise local officials that it is not able to meet requests, they said. Others felt that state and federal level interference occurred; at least one respondent felt that "we know what we need" (that is, the control of resources should be put in the hands of local government).

With regard to field personnel availability, local officials found that the individuals identified for on-site assistance changed frequently or were unavailable when needed. Five respondents said that FEMA should not constantly change the personnel going out into the field.

This resulted in a lack of continuity and duplication of efforts by FEMA staff members who were sent out to assist the localities. For the same reasons, it was suggested that VDEM regional coordinators remain in one area rather than being sent elsewhere depending on immediate needs.

Respondents also answered whether they had adequate training, experience, equipment, and guidance documents or protocols to carry out response and recovery tasks. Figure 19 shows the responses.

Figure 19. Did you have an adequate amount of the following…?



As a follow up, the Team asked what the individuals needed in order to be sufficiently prepared. The respondents expanded on three of the four categories: training, equipment and guidance/protocols. The top answers in each category are highlighted below.

Topics and additional training needed

- EOC operations
- Annual updates and refresher courses
- Public information
- Logistics and support
- Damage assessment
- Mitigation
- Resource management
- Sheltering

Additional Equipment Needed

- Generators (for shelters, garage, public water systems, sewage pump, etc.)

- Interoperable communications (better interoperability, repeater sites, more frequencies, satellite phones, alternate systems)
- Reverse 911
- Water buffalos (tanks and water)
- Radios
- Refrigerator trucks
- Cots
- High profile vehicles
- Chain saws

Additional Guidance/Protocols Needed

- FEMA reimbursement
- Detailed emergency operations plan
- Logistics and rescue management
- FEMA and state resource guide
- Protocols for private contractors re emergency road clearance
- Disaster relief guide
- Documentation requirements and processes for disaster reimbursement
- Debris management plan
- Communications plan
- Media and public information

Damage Assessment and Recovery

Local officials faced the task of ascertaining the type and extent of damage left in the wake of Isabel immediately after the storm moved out of the area. Some damage, such as power outages, wore apparent before the storm was over. However, much of the damage could not be evaluated until it was safe to move about the area. How did communities assess the damage? According to respondents, just about every type of government worker was recruited to staff damage assessment teams, most of which conducted field inspections and recorded damage estimates through windshield surveys. Teams were variably comprised of fire department personnel, building and zoning officials, planning staff, workers from the real estate assessment office, agricultural extension agents, environmental planners, engineers from the public works department, and local elected and appointed officials. Some jurisdictions used radio stations to request that citizens assist by reporting damage to local government offices.

State and federal government personnel such VDOT and the U.S. Forest Service, contributed to the damage assessment teams in some parts of the state. Local residents

volunteered their time, as did the American Red Cross and Community Emergency Response Teams (CERT) teams.

Almost 40 percent of the respondents were assigned a state government liaison to assist in the recovery process; 48 percent reported that FEMA provided a liaison. Communities received this assistance at different times, ranging from "immediately," to several days to a week after the storm. One jurisdiction waited almost a month; another had a liaison assigned even before the hurricane arrived.

On the subject of public assistance and recovery funds, about two thirds of respondents said they were given consistent information from the state and FEMA and that they were aware of the applicable FEMA and state recovery and financial assistance programs that were available. The process for filing applications began almost immediately for many localities, but up to two weeks or later for several others.

Most individuals (70 percent) participating in the questionnaire did not answer the question about obtaining immediate needs funding. Of the 22 people who did answer, two thirds confirmed that if they had an urgent financial need they were able to get help immediately.

FEMA's promptness in preparing and approving project worksheets right after the disaster drew a 25 percent approval rating; 34 percent said that FEMA was not prompt, and 41 percent were returned without the question being answered. The results were almost identical on the question about the state's timeliness in processing approved funds. How could the process be enhanced? There were a number of suggestions, including:

- Assign state and FEMA representatives earlier and help localities make the right decisions early.
- Provide the forms in Excel up front, before the event, with guidelines included so that information is gathered in the correct format.
- Provide quicker notification by e-mail or mail.
- Do not require such a short turnover time for damage assessment information (24 hours) and do not have four or five different FEMA people come to ask for the same information.
- Coordinate state and federal assistance into one process the same as is done for public assistance.
- Provide better information ahead of time about allowable costs and what the limitations are.
- Provide more experienced FEMA and VDEM staff to handle.
- Provide smaller teams from FEMA that stay with the region or locality from start to finish.
- Provide written determinations to avoid different verbal opinions from FEMA.

A majority (55 percent) of respondents were aware, in advance, that their expected local match requirement would be based on fiscal stress. A quarter of the respondents were not aware and another quarter left the question blank.

The final questions in this section of the questionnaire asked how respondents would rate the state as an advocate in helping localities deal with FEMA, and how they would rate FEMA as an advocate with the recovery process. Sixty nine percent rated the state at least "adequate" as an advocate, and 66 percent said FEMA provided adequate or better advocacy services. The answers are shown in Figure 20 and Figure 21.

Figure 20. How would you rate the State as being an advocate for helping you with FEMA?

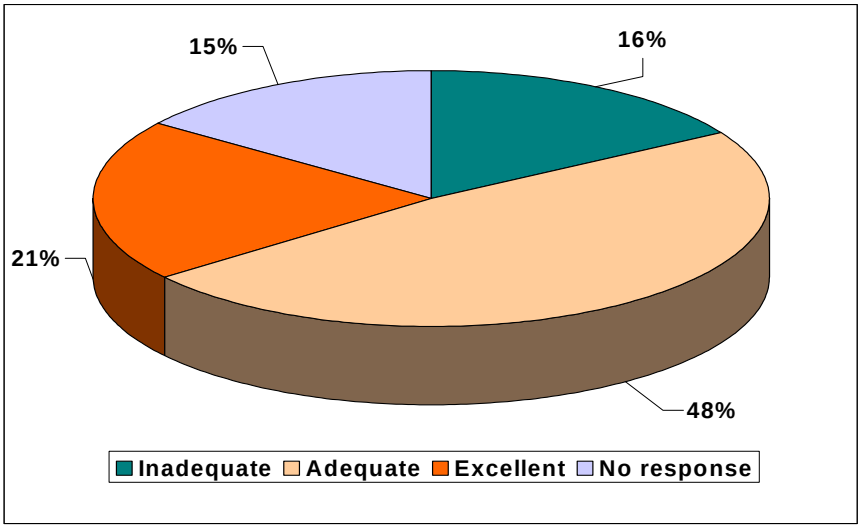
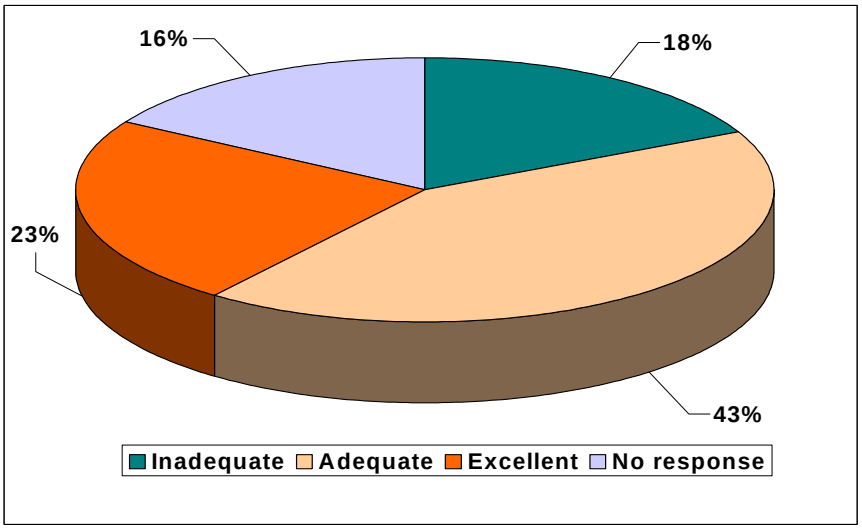


Figure 21. How would you rate FEMA as being an advocate for helping you with the recovery process?



Public Information and Perceptions

Two questions were reserved for information about local citizen and government interface on public information and the biggest concerns that citizens voiced at different stages during the disaster. Local officials reiterated the means they used to communicate with their constituents, such as local newspapers, radio, and door-to-door delivery of important notices. Local governments used faith communities, cable TV stations, community associations, and almost every avenue possible to circulate information to the public and to enable citizens to communicate to their government about problems and concerns. Power outages and difficulty in reaching the public through the media created problems. One exception was King and Queen County where it was noted that radio stations were cooperative in honoring requests for public service announcements. After the storm, two jurisdictions the Team is aware of conducted post-storm critiques, including Arlington County, whose survey is included in Appendix F. VDEM, VDOT and other state agencies, are examining their own lessons learned.

Several themes emerged as primary challenges for local government and main topics of concern for residents. One big challenge was the timely notification of impending flooding. Another challenge was getting out advisories to conserve water and to boil water. Distributing information about shelters, water, ice, food, and generators after the power was out had communities resorting to walking through neighborhoods with flyers or driving to homes in rural areas to check on citizen safety. The public's concerns changed over the course of the disaster, from questions about flooding and evacuation prior to the storm to when power would be restored and how to obtain ice and water afterward. The highlights of the public's concerns are shown in Table 6.

Table 6. What were the biggest concerns of your local citizenry during…			
Most frequently mentioned concerns (in descending order).			
The Days Leading Up The Storm?	*The Day Of The Storm?*	*The Initial Days Following The Storm?*	*A Week Or More Later?*
Issues	***Issues***	***Issues***	***Issues***
Shelter	Shelter access	Power restoration	Debris removal
General preparation	Electricity interruption	Water	Power restoration
Flooding	Flooding/high water	Debris removal	Disaster aid programs
Intensity of storm	Potential wind damage	Recovery and assistance	None
Evacuation	Blocked roads	Minimal/no concerns	Question left blank
Storm Impact	Evacuation assistance/ decision to leave home	Restoration of communications	Water
Loss of power	Personal property damage	Road closures/openings	Food
Wind damage	Public safety	Business service and stores	Clean up
Information	Telephone interruption	Sheltering	Ice
Water	Loss of information	Flooding	Recovery and mitigation
Where to get sandbags	Loss of water	Gasoline	Restoration of telephone service
Personnel	Tree damage	Special needs population	Confusion over insurance coverage
Securing the home	Flood zone information	Traffic control	Shelter
Batteries		Ice	FEMA process for filing claims
Food		Food	Flood
Ice			Food replacement
Power generation			Available resources
Safety			Bewilderment about storm damage
Tension and anxiety			FEMA not approving expected assistance
Transportation			Mosquito control
			Safety of domestic water supply

PART C. FINDINGS AND RECOMMENDATIONS

Governor Warner and the Commonwealth's departments and agencies should be applauded for undertaking this study. State personnel provided outstanding cooperation and support to the Team. Local government officials were extremely responsive to the Team's questions and shared their experiences at the meetings in Richmond, Norfolk, Fredericksburg, and Hot Springs.

Government personnel at both the state and local levels demonstrated great concern about emergency preparedness and their responsibilities for protecting Virginia's citizens. Public servants and volunteers from the private sector and nonprofit agencies dedicated more hours of effort serving the public than residents will ever realize. The unparalleled dedication of all who worked long days and nights to lessen suffering and restore order deserves to be recognized.

The Team identified numerous positive aspects about governments' response to Hurricane Isabel, and learned about the problems that were encountered. In this section of the report the Team presents only the main positive and negative findings, along with recommendations for action. There were many glitches, missteps, and outright failures that the Team heard about which are bound to occur during any disaster, especially one with such widespread impact. Problems that were of limited scope and impact, or that were resolved quickly, did not merit inclusion in this report; it was not the intent of the study to report on every minor issue. Rather, the Team identified the most significant problems and then searched for the problems' root causes, which is where the opportunities for improvement lie.

The findings and recommendations that follow represent the conclusions of the Team after careful analysis of all the information collected and studied. The team hopes that these recommendations will form the basis for several strategic and systematic improvements in the Commonwealth's preparedness and response to major incidents. The recommendations focus on how well prepared local governments and citizens are to face future emergencies.

Positive Findings

Significant Local Response

The Team saw significant evidence that many Virginia local governments and state agencies performed emergency service duties in an exemplary fashion during Hurricane Isabel. Their pre-disaster planning, preparations, and execution of emergency plans undoubtedly saved lives and reduced the potential damages facing citizens in their jurisdictions. The communities that had prepared and trained for emergencies were, for the most part, able to provide essential services for their communities.

Advance Planning

The Commonwealth's departments and agencies set in motion many actions to prepare for the hurricane and be ready to respond once landfall occurred. Though not every preparedness action can be included here, some examples include:

- The state Emergency Operations Center (EOC) and disaster reservists were activated early.
- The Governor made an early declaration of emergency.
- Residents of a special treatment facility that was located in the hurricane's expected path were moved in advance to another Virginia facility.
- The Virginia Department of Transportation (VDOT), Virginia National Guard, and Virginia State Police were well organized, shifted to emergency status, and pre-staged equipment and personnel.
- The Department of Health and Human Resources and the Department of Social Services networked in advance with local service providers, and made other preparations to ensure service to those who needed it.
- The State Corporation Commission Bureau of Insurance sent out advisories concerning flood insurance and related matters.

Timely Reimbursements and Disaster Assistance

FEMA and the Commonwealth designated response teams to assist in Virginia. These teams worked at the local level to ensure quick access to reimbursement services and disaster assistance for citizens who needed it. Having representatives at the local level allowed people to ask questions face-to-face or voice local concerns, rather than directing their requests to distant state or federal offices elsewhere.

Positive Citizen Involvement

There were innumerable positive and creative ways in which people helped each other and dealt with the situation at hand during days without power. Neighbors made personal visits to check on the welfare of others. Residents who had power extended assistance to those who did not by sharing their freezers, cooking equipment, and hot showers. Many dedicated workers carried out critical work in their communities while their own families were facing similar problems and challenges.

Problems and Recommended Actions

State Emergency Operations Plan

Reportedly, it has been seven years since the Commonwealth's emergency operations plan has undergone a comprehensive review beyond annual updates. Since that time, Virginia has experienced the terrorist-related incident at the Pentagon, the sniper shootings in several counties, widespread power outages from snow and ice storms, major flooding, and now, Hurricane Isabel.

> ***1. Recommendation:*** *Key Commonwealth disaster response agencies should review the Emergency Operations Plan and annexes and update them based on the lessons learned from major incidents over the last several years, including considerations for terrorism preparedness.*

Local Government Response: Self-Sufficiency and Resource Management

Historically, the Commonwealth's guidance to local governments has been that during the first 72 hours of a major emergency, local governments need to plan to be self-sufficient. This is standard guidance throughout many states and is also the policy operative for states with regard to assistance from the federal government. The degree to which local governments were prepared to manage on their own for the first 72-hours varied greatly. Predictably, the towns, cities, and counties that were not as well prepared faced proportionately greater difficulties in managing the impact of Isabel on the citizens of the Commonwealth.

> ***2. Recommendation:*** *Local emergency management officials need to ensure that they have adequate disaster response and recovery plans, including a list of local resource providers with pre-negotiated emergency contracts.*

Local plans should cover how essential facilities (for example, fire, law enforcement, primary and backup EOCs, hospitals, nursing homes, shelters, and sewer and water facilities) will continue operating during power outages and how communications will be maintained with state agencies and citizens. Local plans throughout the state should meet standard requirements and cover the same basic elements.

> ***3. Recommendation:*** *Education must occur on all levels to ensure that assistance request procedures are understood before an event occurs.*

> ***4. Recommendation:*** *Local jurisdictions that do not currently have the forms and procedures necessary to request essential resources beyond that which local jurisdictions can supply on their own, should ensure that they are cognizant of proper procedures for future emergencies, and that they have sample forms in stock.*

There were communities that did not know how to submit requests to the state for resources. Numerous jurisdictions said they lacked the paper and electronic forms the state and federal government required. Many were confused and frustrated over the process.

VDEM Management of Resource Requests at the State Level

A failure of the state Virginia Department of Emergency Management (VDEM) system to adequately manage resource requests occurred. The system for capturing the needs of local jurisdictions and for ensuring that there was appropriate action and follow-up was inadequate in several areas:

- Pre-planning and pre-disaster networking with local governments before the hurricane arrived;
- Appropriate structure and staffing for necessary tasks;
- Consistent information on procedures;
- Resource tracking and confirmation protocols.

5. Recommendation: *VDEM has identified many problems in its own after-action assessment; however, VDEM should comprehensively examine the entire system to identify and implement substantive changes.*

6. Recommendation: *The overall data management system for the EOC needs to grow beyond a basic database to a more sophisticated and integrated consequence management software suite that ties into the Virginia Department of Transportation, the Virginia State Police, the Department of Health and Human Resources, and utility companies. It should comprise redundant communications and power back up.*

7. Recommendation: *VDEM should change its restrictive protocol for local governments to request resources so that requests for resources during the initial stages of the disaster can be submitted on-line, by fax, by telephone, or by radio, depending on the best available communications. Quick and effective resource replacement for local governments should be a high priority for VDEM's planning.*

Insufficient Training

Some of the problems associated with state and local communications and with supplying the resources requested could have been avoided had some of the state and local personnel been better trained. There was a lack of knowledge about basic emergency management procedures and the proper role of local governments during disasters in some jurisdictions. At the state level, the cadre of auxiliary disaster personnel (reservists) was often not knowledgeable enough about how to carry out their assignments, or about the state's basic emergency operations procedures. Inadequate training contributed to response and recovery problems. Since Virginia has a vested interest in ensuring that all local governments are ready to protect the safety and welfare of their citizens, and in light of emerging threats, the Commonwealth should ensure that a uniform level of disaster preparedness exists within state and local government.

8. Recommendation: *The Commonwealth should establish emergency management standards and minimum competency levels for key state and local elected and appointed officials, as well as for EOC staff. The standards and competency levels should form the basis for training courses, and should cover the skills and knowledge needed to prepare for all hazards.*

9. Recommendation: *VDEM should ensure that all personnel who are assigned as disaster reservists are adequately trained for their respective jobs, and that all reservists have had training on Virginia's emergency operations plan as well as on basic information about the jurisdictions they are assigned to help (in most cases, this is where they are located).*

10. Recommendation: *The Commonwealth should adopt a financial incentive program that ties preparedness and training to the Commonwealth's (non-federal) share of disaster recovery reimbursement to local governments or to future grant awards. Emergency preparedness accredited local governments (those which can document having achieved the requisite level of emergency management preparedness) would qualify for special benefits.*

Regional Liaisons for Coordination of State Assistance

A major concern voiced by local jurisdictions was that requests for assistance had been lost or misplaced. A second concern was that the staff at the state EOC who were assisting local officials was constantly changing so that situations and problems had to be explained each time a local representative called the state EOC. The same was true with FEMA's disaster teams that called or went out into the communities. This situation created unnecessary delays and confusion in relaying information and was frustrating for local governments.

11. Recommendation: *VDEM should focus its disaster assistance to local governments by using regional or district action officers and assistant officers to maintain liaison with local EOCs. The action officers should be physically located in the EOC as the primary points of contact for all local government requests and communications during disasters. Status briefings should occur whenever shifts change, so that any outstanding contacts or requests can be carried forward and resolved.*

Work and Rest Policies

During the hurricane, disaster personnel worked long hours for many days. Often, these personnel did not have enough rest. The emergency culture instills a sense of overdrive and a heavy commitment to the disaster response. However, disaster employees must break away from the stress and intensity of operations or operations actually can be hindered.

12. Recommendation: *VDEM (and local disaster agencies, where applicable) should establish and enforce a work/rest policy that applies to all emergency personnel while they are engaged in disaster-related activities. Typical work/rest policies during emergencies recognize 12 hours as the maximum time working, followed by rest outside the immediate work area. Guidelines should be widely disseminated and supervisors should be expected to enforce the guidelines.*

Management and Utilization of State and FEMA Personnel

Some of the coordination problems that were encountered arose because many disaster workers did not have clear assignments.

13. Recommendation: *Establish a staffing plan to better organize all state disaster resource personnel assigned to the state EOC and those that are likely to arrive through FEMA. Additional personnel from FEMA need to be identified prior to their arrival and VDEM should inform FEMA about what types of expertise are needed and the number of FEMA employees to be assigned. FEMA*

should ensure that the individuals they send possess the requisite credentials and experience to serve in the capacity directed by VDEM. No FEMA personnel should be dispatched to the field unless authorized by VDEM, with clear missions. VDEM should communicate with local authorities in advance if disaster reservists are expected to be sent so the locality can confirm that they are needed, and make accommodations for housing and food, if necessary.

Public Information

When power was lost, local governments faced an enormous challenge when trying to communicate essential information about health and safety to their residents. Without television, the Internet, or telephones, radio was the predominant vehicle for broadcasting emergency information. However, government encountered numerous challenges getting messages aired on radio often enough or quickly enough. Many of the challenges are attributable to the decisions on programming being made outside the service area of the radio stations.

14. Recommendation: *The Commonwealth should establish a disaster communications committee for the purpose of identifying which local public and private radio stations were used successfully for public information during the hurricane. The work group should prepare a brief report for local governments on how local radio stations (such as private, NPR affiliate, university, and state stations) helped communicate emergency information. The report should provide guidelines on how local governments can obtain better control of emergency public information. The work group should examine policies governing emergency broadcasts on all radio stations with stations operating in Virginia.*

Unrealistic Public Expectations During Emergencies

Most citizens handled the difficulties stemming from the hurricane with courage and patience. However, there were many individuals and communities that voiced great frustration with government, both at the local level and at the state level. Some concerns were valid; others pertained to goods and services for which government is not responsible (for example, the schedules for restoring power and the provision of ice). The public must have a better understanding of what is reasonable and fair to demand of government, and what it should be prepared to do on its own.

15. Recommendation: *The Commonwealth should develop a public information campaign about the role of the individual, and of local and state government before, during, and after emergencies. The information should be available for local distribution.*

Preparation and Response Issues Related to Critical Facilities

There were situations in the state where EOCs, nursing homes, adult homes, emergency facilities, assisted-living facilities, and shelters were without emergency power sources, and basic supplies. Antiquated equipment, failure to test and maintain equipment, and inadequate staffing complicated matters.

16. Recommendation: *State and local EOCs should ensure that they have adequate space, back-up power, and equipment to continue operations during emergencies. State and local officials should verify that they have Continuity of Operations Plan for all critical facilities that supply emergency and disaster-related services, and for communications. All facilities providing care to special needs populations must confirm the adequacy of their emergency power and of their ability to maintain self-sufficiency in communications, water, food, and pharmaceutical supplies for emergencies.*

Communications Between State and Local Government

The state EOC primarily used daily conference calls as the means for communicating directly with local emergency managers. These calls were not as effective as they could have been and sometimes shared incorrect information.

17. Recommendation*: VDEM should develop an improved state and local communications system for the two-way transmission of information during emergencies. The system should set clear guidelines for conference calls and for the transmission of requests for assistance. The system should be organized by region.*

Communications and Coordination with Electric Companies

Disaster-related, widespread, and long-lasting loss of power in many regions was a major problem during Hurricane Isabel, and is a concern for the future.

18. Recommendation: *The Governor should facilitate the development of a joint work group including the State Corporation Commission, key executive branch agencies, and senior managers of the state's electric companies, and should seek cooperation from the state legislature, to improve coordination and information sharing during power outages.*

Better Planning for Debris Removal

The massive amount of wood debris that accumulated following the hurricane overwhelmed government's ability to handle removal and challenged property owners in all regions affected by the hurricane.

19. Recommendation: *VDEM should prepare a debris management plan and offer guidance and training to local governments in generating policies and procedures to quickly and efficiently clear and remove debris after disasters.*

APPENDICES

APPENDIX A
SUMMARY OF INFORMATION FROM THE STATE MEDIA CLIPPINGS

Hurricane Isabel Post-Incident Analysis
Newspaper Article Summaries and Issues for Further Study
Compiled: October 29, 2003

Preparation Issues

- American Red Cross established hurricane operations centers early.
- Virginia Office of Emergency Management started conference calls and coordination with VDOT, VA National Guard, and local emergency management agencies reasonably early (9/15).
- Decision to evacuate Ocracoke was made first because of inaccessibility by land travel (9/16).
- Governor's office discussed plans for evacuation several days before event, but discarded lane reversal option on I-64 because plan only called for this action in a category 4 storm. However, media started to report other evacuation strategies as early as 9/16.
- Public signs of interagency cooperation apparent on 9/16. VA state police move extra troopers to risk jurisdictions. FEMA indicates readiness to preposition teams in NC and VA.
- EOC opens Wednesday 9/17. Evacuation models suggest at least 29 hours are needed to implement evacuation procedures. More than half of the population of Norfolk, Portsmouth, and Virginia Beach lives in neighborhoods that lie in or near flood zones.
- Governor conducts conference call with local officials to discuss statewide preparations on Tuesday 9/16.
- Serious delays due to accidents and congestion reported on 1-664 and in Chesapeake.
- Power companies cite strict regulations regarding tree trimming and removal (as well as opposition from neighborhood groups) as barriers to effective management of trees in right-of-ways.

Response/Recovery Issues

- Lack of generators and diesel fuel hampers recovery efforts in coastal areas. Inexperienced generator use results in carbon monoxide poisoning cases.
- Most evacuated residents were able to return home quickly after storm passed. On Saturday 9/20, only 997 of approximately 15,000 people who had evacuated remained in shelters. Another article places total sheltered at 17,700.
- Approximately 1.8 million people without power. 1.2 million in northern VA advised to boil water. 80 percent of Virginia Beach residents without power. (Reported as of 9/20)
- Biggest problem at the local level was road closures, debris, and right-of-way damage. The Hampton Roads area suffered most.
- South River swells to cause serious flooding in Rockbridge Co. and surrounding areas. In this area, and others, flooding up to a week after the hurricane was a problem.
- Many counties transitioned emergency shelters to "convenience centers" where people could take hot showers, etc.

- Lack of water supply led to property loss due to fire (e.g., Shoney's Restaurant in Henrico Co.).
- Flooding and power outages affected some police, fire, and emergency operations centers forcing them to relocate operations. At least one jurisdiction (York) had 911-call intake service disrupted.
- Midtown Tunnel in Norfolk/Portsmouth floods completely with 50 million gallons of water. Workers were unable to keep up with rising water alarms. Local EM officials initially refuse to assign blame for tunnel flooding. Later VDOT under criticism for not closing tunnel's floodgate early enough or performing advance repairs despite warning that they were needed. Tunnel scheduled to reopen 10/18. Tunnel manager for VDOT resigns.
- Residents demanding dry ice. Local EM officials state that dry ice acquisition and distribution is not in their emergency plans and that they rely on the private utilities to provide this service. At the same time, dry ice factories were out of power, too.
- Alexandria criticized by business owners for flooding due to inadequate number of sandbags.
- By early October, FEMA provides medical management teams, disaster staging areas, and veterinary teams. Army Engineers move 200,000+ gallons of water and hundreds of tons of dry ice to affected areas. Defense Dept. opens four military bases for staging.
- Governor criticized for not making public trips to all affected areas (like northern VA). Public frustration with repair scheduling very apparent.
- Loudoun Co. has trouble disseminating information regarding boiling water and other issues. Many residents don't feel the need to monitor recovery closely because county wasn't affected like other counties in central and southern Virginia.
- Local officials complain that FEMA was too slow and cumbersome to deal with. Others give feedback in congressional hearing in Hampton Roads on 10/21.
- Several hundred Newport News residents angry when they wait 9+ hours in the wrong place to apply for food stamps. In other areas, sites set up to apply for disaster assistance not large enough to accommodate applicants.
- State and federal bureaucracy hampers relief efforts; localities forced to abandon emergency requests and find food, ice, fuel, and generators on their own. FEMA is blamed in media, as well as the state and the governor. Failure to follow established procedures cited as primary cause, but public not satisfied with communication of this information to them either.

Coordination Problems

- A recurring problem was the lack of coordination and communication between state, local and federal agencies (FEMA).
- Requests for things like generators, ice, chainsaws and manpower were not answered in a timely manner and in some cases not at all. This was particularly problematic in the Hampton Roads area; there were many articles related to this shortcoming. There also

were related problems in the Richmond area where distribution points were set up for ice that did not arrive at the scheduled time.

- A lot of finger pointing occurred in relation to who was at fault for unfulfilled requests. Specifically, there was quite a bit of back and forth discussion between Rep. J. Randy Forbes, local authorities (Richmond, Hampton and Petersburg), Rep. Joann Davis and others, and FEMA spokesman David Fukutomi. One article characterized the finger pointing in this way: "Locals pointed to FEMA. FEMA pointed to the state. The state pointed back at FEMA."
- Local municipalities made requests to the state to contact FEMA, which was supposed to process the requests. FEMA claimed it didn't receive the requests that the state claimed were sent.
- Coordination of water and ice pickup locations, times, and dates was poorly handled, and information was spotty.
- Some coordination of response was good, particularly on the local level. When localities relied on their own resources, though limited, they got better results. Many communities such as Westmoreland County, Orange County, the Hampton Roads area, and others all expressed the sentiment that preparedness paid off greatly in their efforts to provide services to their communities during and after the event.
- National Guard response was good given limited manpower.
- The closure of the Midtown Tunnel raised questions about how to facilitate a mass evacuation of people when major roads are impassable. There are not a lot of evacuation route options in that area.
- Communication breakdowns occurred between state, local, and federal agencies with regard to a range of emergency management issues. Local jurisdictions were unable to contact and communicate with state and federal officials for updates, had difficulty resolving spontaneous problems, and experienced difficulties when requests taken by state officials never reached FEMA.
- FEMA low-interest loans and grants for small businesses and home repairs, as well as reimbursement funds for monies spent by the state, seemed to be forthcoming after being processed without problems.
- Post-event hearings revealed that, despite all the talk about advance preparedness, there were major shortages of water and ice, as well as gaps between the time of request and the actual delivery of services.
- There were major problems and inequities in the positioning of FEMA Disaster Recovery Centers, according to a U.S. House of Representatives Committee on Government Reform hearing. Specific areas that were pointed out as being problematic in this regard were the Petersburg and Richmond areas.

Impact in State

- The Hampton Roads area seemed to be the hardest hit, and sustained the most damage.
- The Richmond area and Fairfax County seemed to have the most problems with sewage and water contamination after water-treatment plants lost power. It is estimated that the

cost to fix the problems for future mitigation will be $15 million and $50 million respectively.

- Seniors and nursing homes were hit particularly hard in the aftermath of the storm. They had problems getting services; nursing homes were often delayed in being designated as hospital facilities, which are eligible for federal assistance.
- State agriculture took a serious hit with the loss of millions of dollars of produce.

Water and Ice Problems

- FEMA had difficulty coordinating the delivery of food and water. The process comprised many levels of bureaucracy and communication problems.

Tunnel Closure

- In the Hampton Roads area, the Midtown Tunnel closure (which was caused by a surge in the Elisabeth River during the storm and dumped 44 million gallons into the tunnel) was the result of poor planning and maintenance of the tunnel floodgates; this also led to the resignation of the VDOT tunnel manager.
- The closure highlighted the need to prepare for future events and led to a comprehensive review, new maintenance schedule, and revised tunnel floodgate operations policy. The policy set up a schedule for maintenance of the system along with drills and procedures to implement the closure of the floodgates in future events.

Power Outages

- With regard to the power outages, there was much criticism and anger directed at the public utility providers; this was dealt with through hearings on the performance of the major utility companies in the state. This whole process became very political and is still in the process of being resolved. The problems are huge and will take some time to fix.
- Residents felt that notification could have been much better on the state and federal levels. Most felt that notification for things such as ice and water pickup, chainsaw and generator availability, and manpower assistance was seriously lacking. Many felt that local government agencies did a much better job than state and federal agencies at making them aware of available resources and responding to their requests.
- Local officials complained that the state and federal governments were not delivering ice and other needed supplies fast enough in the week after Hurricane Isabel. In the days and weeks after the storm, FEMA had a total of 8 million pounds of ice delivered to a mobilization site at Fort Eustis, 6 million pounds of which were distributed to people in need, said Mr. Marty Bahamonde, FEMA spokesman. “In absolutely no way was there any ice melting on the tarmac when people wanted ice,” he said. But after nearly everyone’s power was restored, the demand for ice dropped. FEMA had 2 million pounds left over. *October 9, 2003, 32. Newport News Daily Press, (Surplus ice melts away at Fort Eustis).*
- In the storm’s aftermath, several local officials complained about delays in getting ice, bottled water, and generators from state and federal officials. There were also

miscommunications between the emergency management officials and local officials. *October 11, 2003, 9. Washington Post B3 Metro Section, (Panel on Isabel Response named).*

- Federal officials said that Virginia did not submit its first request for Hurricane Isabel relief until four days after the storm. But Public Safety Secretary Marshall denied the allegation, stating that Virginia filed for help the day after (Sept. 19) the hurricane. In subsequent testimony before the House Committee on Government Reform, Secretary Marshall said that it took four days to process the 18,000 relief claims received after the storm. Local officials complained that state and federal officials were late or never delivered on requests for ice, generators, and other supplies. Eric Tolbert, FEMA response division director, said FEMA could not act until the state completed a relief form based on local needs. FEMA sent seven truckloads of ice to Washington, DC, on Sept. 20 before sending any to harder hit areas of Virginia because Virginia had not made a formal request. A review of VEOC situation reports shows no mention of requests for ice and water to the state EOC from local jurisdictions, or from the state to FEMA. September 20 is the first mention of state assistance to local jurisdictions in the delivery of water and ice. *October 11, 2003, 26. Newport News Daily Press (Timing of relief at issue)*

- U.S. Rep. Randy Forbes, a member of the Committee on Government Reform, said the stark differences between the federal and state testimony were disturbing. "The key thing that scares you is the FEMA people and state people–there's no connection there," said Forbes, who also was critical of Secretary Marshall's shift in testimony. Congressman Forbes also criticized the state for failing to set up disaster field offices along the storm's path in central Virginia. *October 11, 2003, 26. Newport News Daily Press (Timing of relief at issue)*

- Suffolk City Manager R. Steven Herbert complained about the lack of help. Five days after the storm the city was notified that 7 pallets of ice and 18 pallets of water were on the way. Later that same day, FEMA said it had no record of the city's request while state officials said they had passed the information along. *October 11, 2003, 26. Newport News Daily Press (Timing of relief at issue)*

- Richard Childress, director of emergency management for Isle of Wight County, testified that state officials relied too much on e-mail to communicate in the five days after the storm. The county's Internet was off-line for eight days after the storm. The state and federal response was so unreliable the city had to contract to get ice from New Jersey. Childress said Marshall caught his attention when he said the state had requested ice for the Isle of Wight the day after the storm–ice that apparently never arrived. *October 11, 2003, 26. Newport News Daily Press (Timing of relief at issue)*

- It took five days to deliver emergency supplies of ice, bottled water, and generators to the City of Norfolk after the hurricane. Ron Keys, Norfolk's director of emergency services, described a conference call on the day of the storm in which he told state and federal officials that Norfolk needed ice and other supplies. He said he assumed somebody was writing his request down. Keys said that days later he was told no one had received such requests from Norfolk. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Curt Shaffer, an administrator with the Hampton PD said city officials and Virginia National Guard (VNG) quickly set up a distribution site for ice and bottle water as FEMA

had instructed. But no bottled water arrived until after Hampton's tap water had been declared safe to drink, he also said ice was slow to arrive where it was most needed. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)* "Distribution of ice to affected localities appeared to be influenced by informal contacts and political demand, not need," Shaffer asserted. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Chief Cade said that Virginia discovered after the hurricane that FEMA wanted the city to provide a 2,500 sq. ft. distribution center for its ice and other supplies. The city had no such vacant building, so it had to rent one, delaying the opening of the center by several days. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Local officials said a parade of FEMA officials had visited the disaster area, bringing mostly confusion. Some promised help that never materialized; other gave contradictory reports of what was available. Keys said the sheer number of FEMA visitors left the locals puzzled over which ones to contact later for help. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Local officials said that requests for supplies sometimes got misconstrued at the state level. Norfolk officials had requested through the state that Roanoke send generators and specialized trucks for removing debris. But when Norfolk and Roanoke officials spoke directly a few days later, they realized that state officials had misstated the request, Keys said. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Rep. Edward L. Schrock, R-2nd, said it was obvious FEMA and state officials need to conduct drills with local officials to iron out communication problems before the next storm hits. *October 11, 2003, 28. Richmond Times Dispatch, B1 (Storm leaves officials skeptical)*

- Chesapeake VA. State and federal officials delayed Hurricane Isabel relief efforts, forcing localities to abandon their emergency requests and find water, food, ice, fuel, and generators on their own, local officials said. Despite stockpiling of water and essentials before Sept. 18th storm, days passed after localities requested emergency aid before the goods arrived, often far short of their needs when they did. *October 10, 2003, 29. Associated Press (Local government left to fend for themselves during the hurricane)*

- Chesapeake Fire Chief Steve Best said it took the city three days to receive a reliable water source. He said it took twice that long to obtain ice, and then only after the city purchased it privately for $55,000. Chesapeake was told to expect the first shipment of ice from FEMA on Sunday the 21st, Best told panel of U.S. congressmen. On Tuesday morning Chief Best was notified he would not receive the ice until Wednesday because Chesapeake ice had been diverted to the Peninsula. At that point he became frustrated and Chesapeake resorted to acquiring its own ice from a contractor in Florida. The first shipment arrived in 16 hours. *October 10, 2003, 29. Associated Press (Local government left to fend for themselves during the hurricane)*

APPENDIX B
COPY OF THE SURVEY QUESTIONNAIRE

HURRICANE ISABEL
ASSESSMENT TEAM

W. Robert Herbert, Chairman • Claire A. Collins, Member • Wm. B. Rowland, Jr., Member

Questions For The After-Action Review Of Response To Hurricane Isabel

Name and Title of Respondent:			**position:**	
Date of Interview:		**Interviewer:**		Control #

A. Disaster Training and Experience

1. Please briefly explain your experience in emergency management prior to Isabel, including the events with which you have been involved.

2. Your Emergency Management Coordinator's experience?

3. What emergency management training have you taken?

4. Have you conducted or participated in a hurricane response exercise in the past 3 years?
   Yes___ No___ Did it make a difference and adequately prepare responders? Yes___ No___

B. Preparing for Isabel

5. Was the advance warning and notification system adequate for the level of damage? Yes___ No___
   If not, what would you recommend for the future?

6. Do you have a written Emergency Operations Plan adopted by your Council or Board? Yes___ No___
   What year was last updated? _____
7. If you do not have a Plan what did you use or do instead? (i.e., create your own EOP on the fly; rely on another level of government to handle requests and information, etc.)?

8. If you have an EOP did it provide adequate guidance to prepare for, respond to, and recover from Isabel?
   Yes___ No ___Did you follow the guidance in the EOP? Yes___ No___ any deficiencies or problems?

9. Did you receive accurate and useful information regarding the following:
    a. The track and timing of the hurricane? Yes___ No___
    b. Predicted impact of the storm? Yes___ No___
    c. Status of emergency preparedness operations? Yes___ No___
    d. Status of evacuation orders and implementation? Yes___ No___

[**For coastal areas only**]

10. Did you use the hurricane evacuation data, preplanned evacuation routes, or other information included in the EOP as the basis for making operational evacuation decisions? Yes___ No___
11. Did you use the HURREVAC 2000 software for evacuation planning? Yes___ No___
12. How well did it work?

13. How did you handle the mandatory evacuation order process? How well did it work? Please explain.

C. Sheltering

14. Did you have to provide temporary shelter to your citizens? Yes___ No___
15. To evacuees from other localities? Yes___ No___
16. Are all the shelters in your jurisdiction: (please check)
    _____ Red Cross approved?
    _____ Staffed by local resources?
    _____ Staffed by not- for- profit agencies?
    _____ Equipped to provide sheltering for special needs populations?
17. What particular resources are needed to shelter special needs populations and did you have those resources?

18. Did the private sector help in sheltering special needs populations? Yes___ No___
19. Were there enough shelters and food to accommodate all who needed shelter? Yes___ No___
20. If an evacuation order is given, do you have a designated shelter location outside your jurisdiction to which you can direct your evacuating population? Yes___ No___
21. Does your jurisdiction conduct shelter operations jointly with surrounding jurisdictions? Yes___ No___
    If you conduct joint shelter operations, are written agreements in place? Yes___ No___
22. Would your jurisdiction agree to be a host-sheltering jurisdiction? Yes___ No___

D. Communications

23. Were there any impediments to alerting and warning citizens about the approaching hurricane and providing advisories about recommended actions? Yes___ No___

24. How did you contact responders and other public sector employees within your locality about revised work schedules, temporary assignments, office closures, and redeployment to alternate sites?

25. Did you encounter any communications difficulties? Yes___ No___ If yes, what were they?

26. Do you have formal mutual aid agreements in place with jurisdictions in your region to provide needed resources? Yes___ No___ Outside your region? Yes___ No___

27. What are these agreements and were they used during Isabel?

28. Is your locality an official participant in the Statewide Mutual Aid Program? Yes___ No___

29. How did you estimate needed resources (personnel and equipment) for responding to Isabel?

30. Was the resource estimate close to what was needed? Yes___ No___

31. Were your local resources adequate for responding to the storm? Yes___ No___

32. What resources (personnel, equipment, and supplies) were you able to obtain from the following:

Resource Requests

Source	*Resources Requested*	*On time?*	*Adequate?*	*If not, what did you do?*
State Department of Emergency Management				
FEMA				
Statewide Mutual Aid				

Source		Resources Requested	On time?	Adequate?	If not, what did you do?
Outside Government	*Private [Identify]*				
	Not-for profit [Identify]				

33. Were key local personnel equipped with adequate communications tools and equipment? Yes___ No___

E. Coordination: Intra- and Inter-Governmental

34. Please indicate on the chart below, how you would rate the coordination activities in responding to Isabel among the following:

Coordination	Inadequate	Adequate	Excellent
a. Between local elected and local appointed officials?			
b. Between local elected officials and the public?			
c. Between local elected officials and state elected officials?			
d. Between local elected officials and federal elected officials?			
e. Between state and federal officials?			
f. With adjacent jurisdictions?			
g. Between your level of government and the State?			
h. Between your level of government and the Federal government?			
i. Among your own staff?			
j. With private entities?			
k. With not-for-profit entities?			

35. What improvements in coordination could be made, and what is needed to accomplish these changes?

36. Did <u>you</u> have an adequate amount of the following: (Please answer yes or no)

_____ Training? What additional training is needed?_____

_____ Experience?

_____ Equipment? What additional equipment is needed?_____

_____ Guidance documents/protocols? What is needed?_____

37. Were there any communications problems, either internal or external? Yes___ No___

    If yes, what were the problems?

F. Damage Assessment and Recovery

38. How was the damage assessment process conducted in your community?

39. Were there adequate local resources to conduct the assessment? Yes___ No___
40. What resources were you able to obtain from outside government to conduct damage assessment and provide recovery services?

    Private sector _____

    Not-for-profit sector _____

41. Were you assigned a State liaison to assist you in the recovery process? If so, when? Were you assigned a FEMA liaison to assist you in the recovery process? If so, when?
42. Have you been given consistent information from the State and FEMA on the public assistance process? Yes___ No___
43. Do you feel you are aware of all the applicable FEMA and/or State recovery and/or financial assistance programs available to your community? Yes___ No___
44. When were you able to begin the public assistance application process for financial assistance in recovery efforts?

45. If you had an urgent financial need for advance funding, were you able to get immediate needs funding? Yes___ No___

46. Did FEMA prepare and approve project worksheets immediately after the disaster? Yes___ No___
    If not, how long, on average, did it take for FEMA to prepare and get all approvals for a project worksheet?

47. How could this process be enhanced?

48. Has the State processing of approved funding been timely? Yes___ No___
49. Were you aware, in advance, of your expected local match requirement that is based on fiscal stress? Yes___ No___
50. How would you rate the State as being an advocate for helping you with FEMA?

    Inadequate___ Adequate___ Excellent___
51. How would you rate FEMA as being an advocate for helping you with the recovery process?

    Inadequate___ Adequate___ Excellent___

G. Public Information & Perceptions (local governments only)

52. What challenges did you face in addressing public questions and concerns and what strategies did you employ to address public information needs?

53. What were the biggest concerns of your local citizenry in? (Please answer all)

- The days leading up to the storm? _____
- The day of the storm? _____
- The initial days following the storm? _____
- A week or more later?_____

H. Final Questions and Additional Information (please write answers below. If more space is needed, use the back of this page)

54. What are the main lessons that have been learned from the response to Hurricane Isabel?

55. Taking into consideration the entire experience with the preparation, response, and recovery to Isabel, what were the primary **positive aspects**? Please consider all levels of government with which you are familiar.

56. Do you have any other comments you would like us to have on topics we have not covered?

APPENDIX C
RESPONDENTS TO QUESTIONNAIRE

RESPONDENTS TO QUESTIONNAIRE

Location	*Name*	*Title*	*Organization*
CITIES			
Alexandria	McRorie, Charles	Emergency Management Coordinator	City of Alexandria
Bedford	Meadows, Craig	City Manager	City of Bedford
Charlottesville	Harden, Kaye	Emergency Services Coordinator	Charlottesville/Albermarle Emergency Operations Center
Colonial Beach	Hicks, Ralph A., Jr.	Emergency Operations Coordinator	Colonial Beach
Colonial Heights	Moore, A.G.	Fire Chief/EMC	City of Colonial Heights
Danville	Young, Douglas	Emergency Management Coordinator	City of Danville
Emporia	Wills, C. Eugene	Emergency Services Coordinator	City of Emporia/Emergency Operation Center
Franklin	Holt, Vince	Emergency Management Coordinator	Franklin Fire and Rescue
Hampton	Wallace, George E.	City Manager	City of Hampton
Harrisonburg	Shiffett, Larry W.	Fire Chief	City of Harrisonburg
Herndon	Summers, Jr. Toussaint E.	Chief of Police	Herndon Police
Lynchburg	Martin, Barry K.	Deputy Coordinator	Emergency Communications Lynchburg, VA
Newport News	Williamson, Jack	Coordinator	City of Newport News
Norfolk	Keys, Ron	Director	Bureau of Emergency Services
Staunton	Angle, Sharon	Director of Planning/ Emergency Coordinator	City of Staunton
Virginia Beach	Marchbank, Mark	Deputy Coordinator, EM	City of Virginia Beach
Waynesboro	Critzer, Gary	Emergency Services Director	City of Waynesboro
Williamsburg	Tuttle, Jackson	City Manager	City of Williamsburg
COUNTIES			
Accomack	Lofts, Jason	Director of Public Safety	Accomack County
Arlington	Penn, Mark L.	Deputy Coordinator	Arlington County Office of Emergency Management

Location	*Name*	*Title*	*Organization*
Berryville	Ash, David	County Administrator	Clarke County
Bowling Green	Fuzy, Ed F.	Director	Caroline County Dept. of Fire-Rescue and Emergency Management
Brunswick	Johnson, F. Thomas	Emergency Services Coordinator	Brunswick County
Campbell	Laurrell, David	County Administrator	Campbell County
Charles City	Miniclier, Jr., John F.		EMS, Charles City County
Chesterfield	Ramsey, Lane B.	Emergency Management Coordinator	Chesterfield County/ Emergency Management
Courtland	Johnson, Michael	County Administrator	South Hampton County
Culpeper	Williams, E. Thomas	Director	Culpeper County, Office of Emergency Services
Cumberland	Hollified, Judy	County Administrator	Cumberland County
Essex	Allen, R. Gary	County Administrator	Essex County
Fairfax	Griffin, Anthony H.	County Executive and Director of Emergency Management	County of Fairfax
Farmville	Pickett, Jonathan L.	Deputy Coordinator/ County Planner	Prince Edward County Administrator's Office
Fauquier	Meyer, Philip	Chief	Fauquier County Department of Fire and Emergency Services
Fluvanna	Wright, Shelly	Special Projects Coordinator, Deputy Emergency Services Coordinator	County of Fluvanna
Frederick	DuBrucker, Gary A.	Emergency Management Coordinator	County of Frederick
Goochland	Brown, Ken	Fire-Rescue Chief	Goochland County Fire-Rescue Department
Henrico	Mastin, Ron	Fire Chief	Henrico County
Isle of Wright	Childress, Richard	Director of Emergency Management	Isle of Wright County
King and Queen	Hackey, Ron	County Administrator	King and Queen County

Location	*Name*	*Title*	*Organization*
Madison	Utz, Stephen L.	County Administrator	Madison County Board of Supervisors
Manassas	Bamford, Stephen F.	Captain	Manassas City Police Department
Mathews	Whiteway, Stephen K.	County Administrator	Mathews County
Orange	Kube, Jr., C. Edward	County Administrator	Orange County
Prince George	Lee, Gilbert	Emergency Management Coordinator	Prince George County
Prince William	Collins, Patrick M.	Emergency Services Coordinator	Prince William County
Rappahannock	McCarthy, John W.	County Administrator	County of Rappahannock
Richmond	Duncason, William	County Administrator	Richmond County
Rockingham	Symons, Robert	Fire Chief/Emergency Management Coordinator	Rockingham County
Shenandoah	Yew, Gary M.	Fire/Rescue Coordinator	Shenandoah County
Spotsylvania	Boggs, Douglas	Emergency Services Coordinator	Spotsylvania County
Surry	Lewis, Terry D.	County Administrator/ Emergency Services Coordinator	Surry County
Sussex	Vick, Eddie T.	Public Safety Coordinator	County of Sussex
Westmoreland	Risavi, Norm	County Administrator	Westmoreland County
Williamsburg	Wanner, Sanford B.	County Administrator	James City County
York	Kopczynski, Stephen P.	Director of Emergency Management Coordinator	York County Department Fire and Life Safety
TOWNS			
Altavista	Foster, Bryan	Town Manager	Town of Altavista
Ashland	Hartgrove, Charles	Town Manager	Town of Ashland
Orange	Martyn, Sabrina M.	Town Manager	Town of Orange

Location	*Name*	*Title*	*Organization*
Smithfield	Marshall, Mark	Chief of Police	Smithfield Police Department
South Hill	Stockton, John	Town Manager	Town of South Hill
Woodstock	Bradford, Larry	Town Manager	Town of Woodstock
COMMONWEALTH OF VIRGINIA			
Richmond	Bannister, Mary	Deputy Commissioner Property and Casualty Division	Bureau of Insurance
Richmond	Bowen, Sandra D.	Secretary of Administration	Office of the Governor
Richmond	Clements, Janet L.	VDEM Deputy State Coordinator	Virginia Department of Emergency Management
Richmond	Crouch, Jr., Robert P.	Chief Deputy Secretary of Public Safety	Office of the Governor
Richmond	Esser, Dolores A.	Commissioner	Virginia Employment Commission
Richmond	Flaherty, Steve	Superintendent	Virginia Department of State Police
Richmond	Mauskapf, Robert P.	State Emergency Planning Coordinator	VA Department of Health
Richmond	Mondul, Steven M.	State Director	VDOT Security and Emergency Management
Richmond	Qualls, Ellen	Governor's Press Secretary	Virginia Governor's Office
Richmond	Williams, Alvin	Deputy Director of Administration	Department of Housing & Community Development
Richmond	Sowers, Deborah		VA Department of Business Assistance
Richmond	Coleman, Mike	Deputy Chief of Staff of Operations	Virginia National Guard

APPENDIX D
LIST OF INDIVIDUALS WHO WERE INTERVIEWED

LIST OF INDIVIDUALS WHO WERE INTERVIEWED

Location	*Name*	*Position*
CITY		
Colonial Beach	Hicks, Ralph A. "Tuffy"	Emergency Operations Coordinator
Hampton	Bunting, Mary	Assistant City Manager
Hampton	Shaffer, Curtis	Director, Plans, Analysis, and Emergency Operations Branch
Manassas	Bamford, Stephen F.	Captain, City of Manassas Police Department
Newport News	Williamson, Jack	Director of Emergency Service
Norfolk	Keys, Ron	Director of Emergency Services
Norfolk	Talbot, Jim	Assistant Director, Emergency Services
Suffolk	Herbert, Steve	City Manager
Virginia Beach	Marchbank, Mark	Deputy Coordinator, Emergency Management
Williamsburg	Tuttle, Jack	City Manager
COUNTY		
Arlington	Carlee, Ron	County Manager
Arlington	Holl, Stephen L.	Deputy Chief of Police
Arlington	Penn, Mark	Fire/EMS Captain, Deputy Coordinator of Emergency Services, Arlington County Fire Department
Arlington	Sun, Diana	Director of Communications and Public Affairs
Augusta	McGehee, John C.	Assistant County Administrator
Bath	Collins, Claire A.	County Administrator
Chesterfield	Ramsey, Lane B.	County Administrator
Chesterfield City County	Price, Lynda F. M.Ed.	Emergency Management Coordinator, Hazardous Materials Coordinator
Dinwiddie County	Massengill, Kevin	Assistant County Administrator
Fairfax	Hyland, Gerry	Supervisor-Mt. Vernon District
Fairfax	Penelope A. Gross	Supervisor-Mason District
Fauquier	Meyer, Philip	Chief, Fauquier County Fire Department
Goochland	Brown, Kenneth J.	Fire-Rescue Chief, Coordinator of Emergency Services, Goochland County Fire-Rescue

Location	*Name*	*Position*
Greensville	Costin, P.S.T. (Ted) AICP	Assistant County Administrator
Greensville	Wiley, Peggy R.	Board of Supervisors
Henrico	Mastin, Ronald L.	Chief, Division of Fire, Emergency Services Coordinator
James City County	Goodson, Bruce C.	Board of Supervisors
James City County	Harrison, Jay T. Sr.	Board of Supervisors
James City County	Wanner, Sandford B. (Sandy)	County Administrator
Lancaster	Pennell, William H. Jr.	County Administrator
Madison	Utz, Stephen L.	County Administrator
New Kent	Christie, Gary F.	County Administrator
New Kent	Davis, W.R. “Ray” Jr.	Supervisor, District 5
Orange	Kube, Jr., C. Edward	County Administrator
Rappahannock	McCarthy, John W.	County Administrator
Spotsylvania	Boggs, Douglas	Captain, Emergency Services Coordinator
Stafford	Hilliard, Kandy	Supervisor-Aquia District
Surrey	Lewis, Terry	County Administrator, Emergency Service Coordinator
York	Kopczynski, Stephen P.	Fire Chief/Director, Department of Fire and Life Safety
York	McReynolds, James O.	County Administrator
TOWN		
Ashland	Davis, Mike P.E.	Director of Public Works
Ashland	Hartgrove, Charles W.	Town Manager
Ashland	Pleasants, Frederic Jr.	Chief of Police
South Hill	Stockton, John W.	Town Manager
COMMONWEALTH OF VIRGINIA		
Bureau of Insurance State Corporation Commission	Bannister, Mary M.	Deputy Commissioner Property and Casualty Division
Bureau of Insurance State Corporation Commission	Lyle, George A. CPCU, CIC, AIE	Insurance Outreach Coordinator Property & Casualty Division
Department of General Services	Bolton, Marc	Director of Virginia Distribution Center
Virginia Department of Administration	Roberts, Jim	Director, Department of General Services

Location	*Name*	*Position*
Virginia Department of Emergency Management	Clements, Janet L.	Chief Deputy State Coordinator
Virginia Department of Emergency Management	Cline, Michael M.	State Coordinator
Virginia Department of Emergency Management	Colstock, Michael	Recovery
Virginia Department of Emergency Management	Jones, L. Ralph Jr.	Deputy State Coordinator
Virginia Department of Emergency Management	Vincent, Albert F.	Director, Operations Division
Virginia Department of Health	Mauskapf, Bob	Statewide Planning Coordinator Emergency Preparedness and Response Programs
Virginia Department of Health and Human Resources	Woods, Jane	Secretary of Department
Virginia Department of Public Safety	Crouch, Robert P. Jr.	Chief Deputy Secretary of Public Safety
Virginia Department of Social Services	Goodwin, Ray	Acting Commissioner
Virginia Department of Social Services	Storen, S. Duke	Director, Division of Benefit Programs, Department of Social Services
Virginia Department of Transportation	Mondul, Steven M.	Division Administrator, Security and Emergency Management
Virginia Employment Commission	Esser, Dolores “Dee”	Director
Virginia State Police	Flaherty, Col. W. Steve	Superintendent
Virginia State Police	Massengill, Gerald	Superintendent (Retired)

APPENDIX E
COPY OF THE CITY OF HAMPTON'S RESOURCE REQUESTS

CITY OF HAMPTON
RESOURCE REQUESTS TO THE STATE EOC
AS OF 1800 NOVEMBER 4, 2003

SUMMARY OF RESOURCE REQUESTS SUBMITTED BY THE CITY OF HAMPTON TO THE STATE EOC

RESOURCE	SIZE	AMOUNT	LOCATION	TYPE	DATE SUBMITTED	SOURCE OF REQUEST
Offered for use as a DFO or DRC the vacant Gateway Building	450,000 sq ft	1	2000 Gateway Blvd	NA	1600 18 Sep 03 Not Filled	Phone and Sitrep
Four 5 ton ARNG trucks to assist with high water evacuation. Needed nlt than 0600 18 Sep	5ton	5	22 Lincoln Street, Hampton, VA 23669	NLT 0600 18 Sep 2003	1411 17 Sep 03 Not Filled Until 1800 on 18 Sep	Phone and Sitrep
Civil Air Patrol overflight for 19 Sep 03 to video damage areas and assess needs.	Na	Na	City of Hampton	Immediate	2330 18 Sep 03 Filled	Phone and Sitrep
Chainsaws - Gas Powered Stihl.	18 – 24 inch bars	50	Hampton Public Works 419 S. Armistead Ave Hampton, VA 23669 POC Ted Henefin 757.727.6020	Immediate	2330 18 Sep 03 1930 19 Sep 03 Not Filled	Phone and Sitrep Sitrep
Manufactured trailer/office space to house City of Hampton Facilities Management	20 x 40 foot	1	Hampton Public Works 419 S. Armistead Ave Hampton, VA 23669 POC Ted Henefin 757.727.6020	Immediate	2330 18 Sep 03 1930 19 Sep 03 Not Filled	Phone and Sitrep Sitrep
Statewide Mutual Aid request for codes/permit/inspectors – electrical,	people	10	Hampton Codes Compliance Department 22 Lincoln Street, Hampton, VA 23669 POC Steve Shapiro 757.727.6021	Immediate	2330 18 Sep 03 Not Filled	Phone and Sitrep
Pure Water for use in Dialysis – pure water request	Gallons	2,000	Sentara Careplex Hospital 4000 Coliseum Drive Hampton, VA 23666 POC Bryan Johnson 757.475.7067	Immediate	0820 20 Sep 03 1930 19 Sep 03 Not Filled	Phone Sitrep
Resupply of Propane Fuel for Hampton Public Safety 800 Mhz Radio System Emergency Generators	100 Lb Tanks	2	Bluebird Gap Farm 60 Pine Chapel Road Hampton, VA 23666 POC Lt Dave Ellis Hampton Police 911 757-727-6111	Immediate	1800 20 Sep 03 Not Filled	Fax

National Guard or State Police for Assignments for Traffic Control	Person	80	Hampton Police Division 40 Lincoln Street Hampton, VA 23669 POC Chief Tom Townsend 757-727-6111	Immediate	1800 20 Sep 03 Partially Filled	Fax
BAG ICE – 32,000 bags daily	TRUCK LOAD - 4000 BAGS OF ICE PER LOAD	8 TRUCKS PER DAY UNTIL VAEOC HEARS OTHERWISE	FEMA REGIONAL DISTRIBUTION CENTER HAMPTON COLISEUM 1000 COLISEUM DRIVE HAMPTON, VA 23664	Immediate	1600 20 Sep 03 2330 22 Sep 03 Partially Filled	Phone Fax
Mosquito Contol Biologists to evaluate threat of Eastern Equine Encephalitis and technicians for trapping and identifying species to pinpoint control needs. (Suggest use of Southern Governor's Compact as all mosquito control assets in Virginia are in the disaster area and unavailable for this mission. Delaware, Maryland, New Jersey or South Carolina)	Team	3 or 4 staff	City of Hampton Department of Public Works 22 Lincoln Street Hampton, VA 23669 POC Ted Henefin 757.727.6020	Immediate	2330 22 Sep 03 Not Filled	Fax
Request Plan of Action for addressing the many unsafe standing trees the pose a public safety hazard	1	Removal Protocol	City of Hampton Department of Public Works 22 Lincoln Street Hampton, VA 23669 POC Ted Henefin 757.727.6020	Immediate	1930 21 Sep 03 Filled	Sitrep
Request Early FEMA approval for "Right of Entry" program to allow removal of storm debris from private property as discussed in phone conversation with State Coordinator	1	Policy Decision	City of Hampton Department of Public Works 22 Lincoln Street Hampton, VA 23669 POC Ted Henefin 757.727.6020	Immediate	1930 21 Sep 03 Not Filled	Sitrep
Statewide Mutual Aid Request to Roanoke City – Knucklebooms and tandem dump trucks and crews; 2-3 codes inspectors; Sewage Pump Station generators	Various	Personnel and Equipment	City of Hampton City Manager's Office 22 Lincoln Street Hampton, VA 23669 POC George Wallace 757.727.6392	Immediate	20 Sept 03 Filled	Letter of Transmittal

Note: Request Early FEMA approval of ROE, is listed as Not Filled. Previous editions of summary had it listed as Filled based on verbal guidance from FEMA and State VDEM. However, no written assurance of eligibility have been provided as of 11/4/03.

APPENDIX F
COPY OF ARLINGTON COUNTY'S EVALUATION

Arlington County, Virginia Survey
October 27-29, 2003

Hello, my name is _____, and I'm with AMERICAN VIEWPOINT, an independent market research firm. We are doing a survey on issues in Arlington County, and I would like to ask you a few questions. We are not selling anything and all your responses will be kept completely confidential. The survey will only take a few minutes.

A. Are you over the age of 18?

Yes	***GO TO Q1***
No	***GO TO QB***

B. Is there anyone in your household who is over the age of 18?
If Yes Ask: May I please speak to that person

Yes	***REPEAT INTRODUCTION***
No	***THANK AND TERMINATE***

1. Do you feel that things in the County of Arlington are generally going in the right direction or do you feel things have gotten off on the wrong track?

67%	Right Direction
11%	Wrong Track
20%	Don't Know
2%	Refused / No Answer

2. In general...would you say that you and your immediate family are very prepared, somewhat prepared, not too prepared or not at all prepared for a major emergency?

20%	Very Prepared
58%	Somewhat Prepared
13%	Not Too Prepared
7%	Not At All Prepared
2%	Don't Know
*	Refused

3. How worried are you personally about a major emergency hitting the Arlington area? Would you say that you are very worried, somewhat worried, not too worried, or not at all worried?

7%	Very Worried
31%	Somewhat Worried
41%	Not Too Worried
20%	Not At All Worried
1%	Don't Know
0%	Refused

4. Thinking about Hurricane Isabel...how were you and your immediate family affected? ***ROTATE ACCEPT MULTIPLE RESPONSES READ 1 THRU 6***

63%	Lost power	
8%	Lost phone service	
7%	Had water damage	
10%	Lost trees	
2%	Major Property Damage	
24%	Other	***SPECIFY***
9%	Don't Know	
*	Refused	

5. Thinking about your personal preparations and your immediate family's preparations for Hurricane Isabel...would you say that you were very prepared, somewhat prepared, not too prepared or not at all prepared?

35%	Very Prepared
46%	Somewhat Prepared
10%	Not Too Prepared
7%	Not At All Prepared
2%	Don't Know
1%	Refused

6. Where did you get information to prepare you and your family for Hurricane Isabel? ***ROTATE ACCEPT MULTIPLE RESPONSES***

3%	Arlington County materials	
2%	Arlington Alert	
1%	Arlington County Government Cable Channel	
65%	Television news reports	
27%	Radio news reports	
11%	Friends, Neighbors and Co-Workers	
24%	Other	***SPECIFY***
5%	Don't Know	
1%	Refused	

7. When preparing for Hurricane Isabel...did you ever go on-line and look at Arlington County's website and their emergency preparedness section?

7%	Yes
91%	No
2%	Don't Know
*	Refused

IF YES, ASK

7A. How would you describe the information you found on the County website...would you say that it was very helpful to you in preparing for Hurricane Isabel, somewhat helpful, not too helpful or not at all helpful?

47%	Very Helpful
38%	Somewhat Helpful
6%	Not Too Helpful
4%	Not At All Helpful
5%	Don't Know
0%	Refused

7B. When you logged on to the Arlington County website...which of the following were you looking for? ***ROTATE ACCEPT MULITPLE RESPONSES***

36%	Safety Information	
63%	Emergency Preparedness Information	
3%	Governmental organization information such as how to contact FEMA, where to go for food stamps, etc.	
23%	Other	***SPECIFY***
3%	Don't Know	
0%	Refused	

8. Would you say that Arlington County should do more to promote emergency preparedness among its' citizens, is doing the right amount to promote emergency preparedness among its' citizens, or should do less to promote emergency preparedness among its' citizens?

32% Do More
54% Right Amount
2% Do Less
11% Don't Know
* Refused

IF DO MORE ASK:

8A. What types of things should Arlington County be doing more of?

39% More communication / information (in general)
10% Promote web-site more
10% Evacuation routes / Emergency plan
10% Emergency preparation (in general)
10% Flyers / Pamphlets / Newsletters
9% Power lines / Electricity preparations
4% TV ads
4% Local shelter awareness
4% Road conditions information / Traffic patterns information
4% Safety training / classes / seminars
3% Radio ads
3% Newspaper articles
3% Water supply preparations
3% Emergency / medical / fire services
2% Programs for seniors / for the elderly
1% Public service ads
1% Can't think of anything
3% Other
8% Don't know / Refused

9. How informed do you feel that you and your immediate family were DURING Hurricane Isabel? Would you say that you were very informed, somewhat informed, not too informed or not at all informed?

61% Very Informed
30% Somewhat Informed
4% Not Too Informed
3% Not At All Informed
2% Don't Know
* Refused

Still thinking now about the Hurricane Isabel...I would like to read to you a list of actions taken by Arlington County following Hurricane Isabel and have you rate the County of Arlington's response. Would you say Arlington County did an excellent job, a very good job, a good job, not too good a job or not a good job at all in...? ***ROTATE***

10. Picking up brush and clearing away downed trees

12%	Excellent Job
27%	Very Good Job
42%	Good Job
6%	Not Too Good A Job
3%	Not A Good Job At All
9%	Don't Know
*	Refused

11. Clearing roads

15%	Excellent Job
33%	Very Good Job
37%	Good Job
4%	Not Too Good A Job
2%	Not A Good Job At All
10%	Don't Know
1%	Refused

12. Keeping the public informed

11%	Excellent Job
23%	Very Good Job
41%	Good Job
8%	Not Too Good A Job
3%	Not A Good Job At All
13%	Don't Know
1%	Refused

13. Supplying ice to those in need

4%	Excellent Job
7%	Very Good Job
15%	Good Job
7%	Not Too Good A Job
7%	Not A Good Job At All
59%	Don't Know
1%	Refused

14. What is the ONE thing that Arlington County could have done better in response to Hurricane Isabel? ***(IF RESPONDENT SAYS ANYTING HAVING TO DO WITH ELECTRICITY OR POWER, ASK FOR ANOTHER RESPONSE)***

16% Keep public better informed
15% Restore power sooner
5% Clear trees / debris quicker
4% Was not affected by Isabel
3% Cut down / trim dead / old trees before Isabel
3% Provide dry ice
2% Provide better / more supplies
1% Better school planning
1% Bury electrical lines
30% Nothing / Did a good job
9% Other
18% Don't know / Refused

15. How informed do you feel that you and your immediate family were FOLLOWING Hurricane Isabel? Would you say that you were very informed, somewhat informed, not too informed or not at all informed?

53% Very Informed
32% Somewhat Informed
6% Not Too Informed
3% Not At All Informed
4% Don't Know
* Refused

16. A great deal of the information that the media and others put out during and immediately following Hurricane Isabel related to the greater Washington area and not Arlington County specifically. How important is it to you to have Arlington County specific information during an emergency such as Hurricane Isabel? Would you say it is very important, somewhat important, not too important or not at all important that the information is Arlington County specific?

60% Very ~~Informed~~
23% Somewhat ~~Informed~~
12% Not Too ~~Informed~~
2% Not At All ~~Informed~~
3% Don't Know
* Refused

17. Are you familiar with the Arlington Alert, a county program that you could sign up for that allows you to receive text messages on your mobile phone, Blackberry or Palm device in the event of an emergency like Hurricane Isabel?

20% Aware
77% Not Aware
3% Don't Know
* Refused

IF AWARE ASK:

17A. Do you or does anyone in your household currently subscribe to Arlington Alert?

34%	Yes
65%	No
1%	Don't Know
0%	Refused

And now I have just a few questions for statistical purposes only . . .

D1. What is your age?

11%	18-24
17%	25-29
12%	30-34
9%	35-39
12%	40-44
7%	45-49
9%	50-54
6%	55-59
3%	60-64
3%	65-69
3%	70-74
5%	75 And Over
2%	Refused

D2. Are you a small business owner, that is, a business that employs 25 people or less, do you work for a small business, or does a member of your immediate family own or work for a small business?

8%	Yes, Owner
12%	Yes, Employee
5%	Yes, Family Member
75%	No
0%	Don't Know
1%	Refused
24%	**TOTAL SMALL BUSINESS**

D3. Do you consider yourself to be White, Black, Hispanic, Asian, or something else?

64%	White
9%	Black
15%	Hispanic
9%	Asian
0%	Other / Something Else
0%	Don't Know
3%	Refused

D4. Which of the following best describes where you live. Do you. . .***ROTATE1 THRU 3***

47% Own A House Or Condominium
13% Rent A House Or Condominium
36% Rent An Apartment
3% Other
1% Don't Know / Refused

D5. On average, which of the following best describes how often you are on the Internet? **[READ 1 THROUGH 8]**

33% Several hours per day
33% Daily, but less than several hours per day
8% Almost every day
9% At least once per week
4% A few times per month
* Every month or so
2% Rarely
9% Never
* Don't know
2% Refused

D6. How long have you lived in Arlington County?

15% Less than one year
13% Between one and two years
15% Between two and five years
16% Between five and ten years
37% More than ten years
1% Don't Know
2% Refused

D7. Gender

48% Male
52% Female

D8. Geographic Area

23% North (22101, 22210, 22205, 22207, 22213)
30% Central (22201, 22203, 22209)
44% South (22202, 22204, 22206, 22211)